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ANNUAL REPORT

OF THE


SURGEON-GENERAL

OF THE

PUBLIC HEALTH AND MARINE-HOSPITAL
SERVICE OF THE UNITED STATES

FOR THE

FISCAL YEAR 1904.



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WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1904.

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FISCAL YEAR 1904.



WASHINGTON:
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TREASURY DEPARTMENT,
Document No. 2378,
Public Health and Marine-Hospital Service.



OPERATIONS
OF THE
UNITED STATES PUBLIC HEALTH AND
MARINE-HOSPITAL SERVICE.
1904.

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MARINE-HOSPITAL SERVICE.

1904.

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LETTER OF TRANSMITTAL.

TREASURY DEPARTMENT,
Washington, D. C., December 5, 1904.

SIR: In accordance with section 9 of the act of Congress approved July 1, 1902, entitled "An act to increase the efficiency and change the name of the Marine-Hospital Service," I have the honor to transmit the annual report of the Surgeon-General of the Public Health and Marine-Hospital Service for the fiscal year 1904.

Respectfully,

LESLIE M. SHAW,
Secretary.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

ANNUAL REPORT

OF THE

SURGEON-GENERAL, PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

REPORT TO THE SECRETARY.

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND
MARINE-HOSPITAL SERVICE,
Washington, D. C., September 17, 1904.

Hon. LESLIE M. SHAW,
Secretary of the Treasury.

SIR: I have the honor to submit, for transmission to Congress, in accordance with the act of July 1, 1902, the following report of transactions of the Public Health and Marine-Hospital Service of the United States for the fiscal year ended June 30, 1904, the same being the thirty-third annual report of the Service, in the one hundred and sixth year of its existence, and the third annual report under its new name.

The operations of the Service have been conducted under the act above referred to, and Service regulations in accordance therewith promulgated by the President August 12, 1903, which supersede the regulations of November 29, 1902.

PERSONNEL.

COMMISSIONED CORPS.

At the close of the fiscal year the commissioned corps of the Service consisted of 118 officers, as follows: The Surgeon-General, 6 assistant surgeons-general, 25 surgeons, 36 passed assistant surgeons, and 50 assistant surgeons. Four candidates passed a successful examination for admission to the corps and were commissioned assistant surgeons.

CASUALTIES.

Among the casualties enumerated in the report from the division of personnel and accounts should be specially noticed the sad death of Surg. R. D. Murray, due to an accident while engaged in the suppression of yellow fever at Laredo, Tex. The details are mentioned

in the report of Surgeon Guiteras on pp. 314-315 of this report. Surgeon Murray's skill and devotion through thirty years of service in the suppression of epidemic diseases, particularly yellow fever, were so marked as to give him a national reputation and to make his loss a public misfortune.

ACTING ASSISTANT SURGEONS.

At the close of the fiscal year there were 194 acting assistant surgeons, including 8 appointed for duty at fruit ports of Central and South America whose services will be terminated at the close of the quarantine season.

PHARMACISTS.

At the close of the fiscal year there were 49 pharmacists, as follows: Pharmacists of the first class, 16; of the second class, 25; of the third class, 8.

ATTENDANTS.

At the beginning of the fiscal year there were 577 hospital attendants at the marine hospitals, quarantine stations, and on epidemic duty. The number at the close of the fiscal year was 643.

BOARDS.

During the fiscal year 41 boards of medical officers were convened for the physical examination of officers of and applicants for entrance into the Revenue-Cutter Service.

EXPENDITURES.

SERVICE FUND.

The balance of the appropriation for the maintenance of the Public Health and Marine-Hospital Service at the beginning of the fiscal year was \$486,638; the receipts from all sources, tonnage tax, repayments, care of foreign seamen, and reimbursements from the Immigration Service, etc., were \$937,257.61. The expenditures for the same period were \$1,168,252.36, leaving a balance on hand at the end of the fiscal year of \$255,643.25. These expenditures included improvements and repairs to marine hospitals, heating apparatus, furniture, and fuel, light, and water, these items being no longer included by Congress in annual appropriations.

EPIDEMIC FUND. *

The amount available of the appropriation for preventing the spread of epidemic disease at the beginning of the fiscal year was \$489,051.99; the expenditure was \$211,461.82, leaving a balance June 30, 1904, of \$277,590.17.

QUARANTINE FUND.

The amount of the appropriation was \$325,000. There were repayments for the care of foreign seamen, etc., of \$1,605.88. Congress also made a deficiency appropriation of \$9,500 for "quarantine service, 1904, repairs to floating property." When all of the accounts are adjusted, a small balance of these appropriations will remain.

MARINE HOSPITALS AND RELIEF.

The relief statistics for the year are as follows:

Total number of patients.....	58, 556
Number of patients treated in hospital.....	14, 303
Number of patients treated in dispensary	44, 253
Total number of days' relief in hospital.....	415, 292
Decrease in total number of patients as compared with last year	17
Increase in number of hospital patients over previous year	736
Increase in number of days' relief	31, 903

The Service controls and operates 22 hospitals, all of which are owned by the Government.

In addition to the marine hospitals there are 122 relief stations where seamen receive hospital and dispensary treatment. A relief station was established during the year at Ketchikan, Alaska.

NEW HOSPITALS.

Pittsburg, Pa.—As authorized by act of Congress approved March 3, 1903, the Secretary of War, on the 7th of May, 1904, transferred to the custody and control of the Treasury Department a portion of the United States arsenal grounds, Pittsburg, Pa., 5 acres in extent, to be used as a site for the proposed marine hospital.

Buffalo, N. Y.—A site for the marine hospital was purchased during the year at a cost of \$22,000. The site is 3 acres in extent and is situated on Main street, $3\frac{1}{4}$ miles from the city hall.

Savannah, Ga.—Contract has been let for the construction of the new hospital for \$96,170, the building to be completed August 15, 1905.

SANATORIUM FOR CONSUMPTIVES, FORT STANTON, N. MEX.

The number of patients cared for in this institution continues to increase. Three hundred and eighty-six patients have been treated during the year, exceeding the number for the previous year by 112.

Number of patents treated	386
Number discharged, cured	16
Number discharged, disease arrested.....	9
Number discharged, improved	87
Number discharged, not improved.....	19
Number discharged, nontubercular, recovered.....	1
Died	62
Remaining under treatment.....	192

PURVEYING DEPOT, NEW YORK, N. Y.

During the year 718 requisitions were filled, and supplies furnished to the marine hospitals and quarantine stations in the United States and its dependencies. Supplies were also purchased for the Immigration Service and for the vessels of the Revenue-Cutter Service and the Coast and Geodetic Survey. Provision has been made for an examination of drugs by the Hygienic Laboratory in order to determine the purity of those purchased for issue.

AID TO OTHER SERVICES.

Aid was extended to other branches of the Government, in the matter of physical examinations, as follows:

Service.	Examined.	Rejected.
Revenue-Cutter Service	728	128
Steamboat-Inspection Service	1,812	126
Life-Saving Service	1,161	37
Coast and Geodetic Survey	53	6
Light-House Service	12	3
Civil Service Commission	1,405	89
Isthmian Canal Commission	2	0
Total	5,173	389

Physical examinations were also made of 604 American merchant seamen, of whom 88 were rejected; and of 6 foreign seamen, of whom 3 were rejected.

MEDICAL INSPECTION OF IMMIGRANTS.

During the fiscal year 840,714 immigrants were inspected by officers of the Service to determine their physical fitness for admission, as prescribed by the immigration laws. At all ports of the United States where aliens seek admission officers have been detailed in accordance with the law, and on request of the Immigration Service, for the purpose of making these examinations. The details of officers for a like purpose at Naples, Italy, and Quebec, Canada, have been continued, and additional officers have been stationed at Vancouver and Victoria, British Columbia, for the same purpose by special request of the Immigration Bureau.

By request of the honorable Secretary of Commerce and Labor, and with your approval, all the officers on duty in Japanese and Chinese ports were directed to make medical inspection of aliens embarking for the United States at said ports, and to certify upon each immigration manifest that those whose names are inscribed on the manifest are free from loathsome or dangerous contagious disease. In the event of the detection of a would-be immigrant with a prohibitive disease the officers were instructed to notify the steamship companies accordingly, it being well understood that such immigrants, if carried, would subject the steamship companies to penalties on arrival in the United States. This provision has been executed without friction and with great benefit both to the Immigration Service and to the steamship companies, statistics which will doubtless be published by the Commissioner-General of Immigration showing that a large number of immigrants have been prevented from leaving for the United States who would have been rejected on arrival, and would have caused an infliction of penalty upon the steamship companies. The steamship companies themselves made request for this arrangement.

The officers in Japanese and Chinese ports were further directed to make a descriptive list of aliens recommended for rejection copies of list to be sent immediately to the medical officer at the port of arrival, to the Commissioner-General of Immigration and to the Public Health and Marine-Hospital Bureau.

A like arrangement for immigrants leaving European ports for the Atlantic ports of the United States is desirable but as yet has not been effected save at the port of Naples, where the inspection by an officer of this Service is made by request of the Italian Government.

SMALLPOX.

The report of the division of sanitary reports and statistics shows that during the six months ended December 31, 1903, smallpox was reported from 35 States, with a total of 13,739 cases and 606 deaths. During the six months ended June 30, 1904, smallpox was reported from 37 States and Territories, with a total of 11,367 cases and 512 deaths. Total for the year, 25,106 cases and 1,118 deaths. Total for the previous fiscal year, 1903, 42,590 cases and 1,642 deaths.

This is a great decrease since last year, and would indicate that the disease had reached the highwater mark in 1902 and will continue to decrease in the future.

This decrease may be due, in part at least, to fewer mistakes in diagnosis. Within the past year the Bureau certainly has received fewer requests for expert diagnosticians and fewer communications than formerly, showing that the writers confused the disease with other maladies. It is believed, too, that there is greater confidence in vaccination and that the vaccine itself has been so improved by the manufacturers as to remove in a great measure such prejudice as has existed against it. The fact that all of the manufacturers of vaccine are now required by law to have their establishments licensed after a rigid examination by Government authority is a good reason for the growth of confidence in the purity and potency of vaccine.

The Service has continued to transmit its pamphlets upon protection against smallpox, has rendered aid when requested, but has also continued in the policy which was announced in the annual report for 1898, leaving to the States themselves the suppression of the disease therein, believing that a disease so easily conquerable should be left to the management of State and municipal authorities. The result has been a strengthening of the medical authorities of the States and cities, both by the enactment of necessary State and municipal laws and through the administrative activity required of State and municipal officers.

The aid rendered to the State health authorities of Maine in the exclusion and suppression of smallpox at the Canadian border was continued throughout the year. The officers engaged in the work report a total of 93 families under observation, 3,753 persons inspected, 1,736 persons vaccinated, 206 cases of smallpox treated, and 111 dwellings and 20 schoolhouses disinfected.

LEPROSY.

In the annual report of 1902 reference was made to the report of the commission of medical officers of this Service appointed by law to investigate the origin and prevalence of leprosy in the United States and report upon measures necessary for the prevention of its spread. The commission recommended at least one leprosarium in the United States where lepers found in the several States could be segregated, and a bill was prepared, but owing to the consideration of

the matter of leprosy in the Hawaiian Islands and suggestions which were made of sending there all lepers from the United States, it was deemed inadvisable to present a measure to Congress without further consideration of this feature of the subject.

I have to recommend the establishment of a leprosarium in the continental United States. It is believed that the necessary site can be found on Government land, and it is proposed to submit for your approval a bill containing necessary provisions. In the meantime the health authorities of the Hawaiian Islands have signified their earnest desire that this Service should make use of the opportunity presented by the leper settlement on Molokai for a scientific inquiry into the best methods for the care and treatment of lepers. The leprosy germ (*Bacillus leprosi*) has been isolated, but it is believed that much may be accomplished by a thorough inquiry into the methods of cure, and it is suggested that in any legislation regarding leprosy there be included a provision for the detail of specially qualified officers in Hawaii for this purpose.

PLAGUE.

Plague, which has existed in San Francisco since March 6, 1900, though reported occasionally during the fiscal year, has steadily diminished. During the twelve months ending June 30, 1904, there were 24 cases and 23 deaths, but no case has been reported since February last.

The cooperation of the State and municipal authorities of California and San Francisco with the Public Health and Marine-Hospital Service for the purpose of eradicating plague infection in the Chinese district of San Francisco has been effective and the work has been steadily carried on under the direction of Service officers. The fact that no case of plague has been reported in Chinatown since February 19 indicates the thoroughness with which the work has been done and justifies the methods adopted for the extermination of this infection. Doubtless due to improved sanitary conditions, the mortality from all diseases in Chinatown (with an average population of 13,000) was reduced from 31.70 per 1,000 for the fiscal year 1903 to 27.23 per 1,000 for the fiscal year 1904.

The prevalence of plague on the west coast of South America, in Peru and Chile, and also in Uruguay, Paraguay, and Brazil, on the east coast, indicates the danger which now menaces and will in all probability continue to menace the United States in the immediate future from these our southern neighbors. The special measures which have already been taken to protect the Isthmian Canal Zone from this insidious disease are narrated elsewhere. They include the detail of officers in foreign ports and special quarantine measures at Panama and Colon.

There is encouragement, however, in the fact that we have for this disease both preventive inoculations and a curative serum, that it can be recognized with scientific accuracy, and that there is cooperation on the part of the different nations toward its extinction. The sanitary conference held in Paris, an account of which is contained in another part of this report, was productive of practical regulations and agreements, which will undoubtedly prove of great value in consideration of this world-wide danger.

The disease, too, is better understood as to mode of transmission,

and at the Paris conference the opinion seemed to prevail that plague has been deprived in large measure of its traditional terrors and that persons afflicted with the bubonic (the ordinary) form of the disease are not per se dangerous, but are dangerous as regards the possibility of their infecting their surroundings. The continued prevalence of the disease and its great mortality in India, where it caused nearly 1,000,000 deaths during the last fiscal year, remain as a source of anxiety to all other nations despite the fact that the disease is so largely restricted to the native population. As shown by the report of the division of sanitary report and statistics, there were, from May, 1903, to May, 1904, 913,784 deaths from this disease in India, an increase of more than 250,000 over the number of deaths occurring during about the same period of the previous year.

It should be remarked, however, that the British Government, which for a time lessened its protective measures on account of difficulties with the native population, religious scruples, etc., have again begun more active measures, prosecuted in a manner to avoid exciting the opposition heretofore encountered.

YELLOW FEVER.

During the year just ended nearly all the cases of yellow fever occurred near the Mexican border. In Laredo, Tex., from September 24, 1903, to March 18, 1904, there were reported 1,014 cases, with 107 deaths; in Minera up to November 28, 1903, 137 cases, with 11 deaths; in San Antonio from October 21 to November 28, 1903, 43 cases and 16 deaths. Other places in Texas in which yellow fever was reported present were Cannel, Castroville, Hondo, and Dewitt County.

In the annual report for 1903 special attention was invited to the prevalence of yellow fever in Mexican ports and the location of Service officers at El Paso, Eagle Pass, and Laredo, Tex., in aid of the Texas State quarantine authorities. The disease, which subsequently assumed epidemic proportions along the Mexican side of the Rio Grande, had existed unannounced for a considerable period, and to this fact and the low fordable condition of the Rio Grande, the epidemic upon the Texas side of the river can probably be attributed.

The fever was not reported officially until the third week in September, and when the officers of the Public Health and Marine-Hospital Service detailed for the suppression of the disease arrived in Laredo, September 25, they were confronted by a very serious problem. Cases of yellow fever were reported in rapid succession from widely separated points, this probably being the period of the third mosquito cycle of infection, showing that the disease had already obtained a firm foothold and was widely disseminated among a population almost entirely nonimmune. There were an abundance of *stegomyia*, thousands of unscreened water tanks and other breeding places, and an entire lack of police or other authority to enforce sanitary measures. In spite of these discouraging conditions some remarkable results were accomplished. In Nuevo Laredo, Mexico, where very little antimosquito work was done, 50 per cent of the population contracted the disease. In Laredo, Tex., directly across the river, where after October 1 fever cases were screened, water tanks, etc., oiled, and infected premises disinfected to kill mosquitoes, 1,050 cases devel-

oped in a population of 10,000, constituting only about 10 per cent of the population. The practical results obtained by drainage, mosquito destruction, prompt screening of all fever patients, and screening of water containers show that this disease can be controlled by measures directed exclusively toward the mosquito. So thoroughly was the work of destroying mosquitoes, and especially the work of oiling containers and other breeding places performed, that an officer of the Service detailed in November to study infected yellow-fever mosquitoes could not find in Laredo, after diligent search, enough *stegomyia* in the adult, larval, or pupal stages to carry on his work.

In January I visited Mexico and conferred with the Mexican authorities for the purpose of considering measures for the eradication of yellow fever in both Republics. As a result of this conference an agreement was reached and a vigorous prosecution was at once begun of a practically identical plan of campaign upon both sides of the Rio Grande.

The plan, as outlined, may be found in the report of the division of domestic quarantine.

With regard to the elimination of this disease from the Western Hemisphere, which has been the subject of hopeful comment in previous annual reports, it would appear that the clearance of yellow fever from the island of Cuba, the sanitary work which has been done in ports of the United States with special reference to it, and the admirable measures which have been taken by the Mexican Government to the same end, are having a marked effect. South and Central American republics are giving evidence of attention to the same matter, and in like manner, and it is not too much to hope that through the cooperation of the different American republics, brought about largely through the international sanitary conventions, the end may in reasonable time be achieved.

The fact that the disease is conveyed in but one manner (viz: by the mosquito) gives force and focus to the work of elimination. The ultimate cause, however, remains as yet undetermined. The results of the investigations of working party No. 1 of the Yellow Fever Institute of the Public Health and Marine-Hospital Service gave every promise of the determination of the etiology, but subsequent investigations by working party No. 2 of the same institute at Veracruz failed to confirm all the findings of working party No. 1, leaving the cause still undetermined; but as to the method of transmission through the mosquito there can be no doubt, the findings of the army commission in Cuba having been amply confirmed both by scientific investigations of the Yellow Fever Institute of this Service, by the practical results of preventive measures based upon those findings, and also by the commission appointed under the auspices of the Pasteur Institute of Paris, whose labors and conclusions were conducted and reached in the city of Rio de Janeiro.

THE NATIONAL QUARANTINE SERVICE.

The work of conducting national quarantine for the exclusion of epidemic diseases has been carried on during the year at the 40 national inspection and disinfection stations located upon the Atlantic, Gulf, and Pacific coasts of the United States. A total number of 7,021 vessels were inspected and 323 vessels disinfected before entry, with the least possible delay to commercial interests.

Aid was extended to the health authorities of the State of Maine upon the Canadian border in the exclusion and suppression of small-pox, reports from officers detailed for this work showing a total of 93 families under observation, 3,753 persons inspected, 1,736 persons vaccinated, 206 cases of smallpox treated, and 111 dwellings and 20 schoolhouses disinfected.

The Service has maintained the usual land quarantine stations along the Texas-Mexican border in aid of and in cooperation with the State health authorities of Texas, at El Paso, Eagle Pass, and Laredo.

The national quarantine procedures in the suppression of yellow fever at Laredo and of the plague at San Francisco will be found in other portions of this report.

The national quarantine laws and regulations have also been enforced through Service officers stationed at the ports of Porto Rico, Hawaii, and the Philippines. Necessary improvements at the quarantine station on Miraflores Island, Porto Rico, will be made as soon as the title has been declared clear, out of the appropriation of \$23,500 made for the purpose by the Fifty-eighth Congress. Attention is specially invited to the effective administration of quarantine in all three of these insular possessions. The report of the chief quarantine officer of the Philippines is of particular interest. It illustrates clearly how the great epidemic diseases may be suppressed and excluded in the presence of untoward conditions by scientific methods accompanied by administrative skill and energy.

The details of officers stationed in the offices of the United States consuls at Yokohama, Nagasaki, and Kobe, Japan, and Hongkong and Shanghai, China, have been continued.

On account of the continued epidemic of plague in Bombay and Calcutta, India, officers have been detailed for special duty in the offices of the United States consuls at those ports. Officers have been on duty also at the following foreign ports: In Cuba at the ports of Habana, Matanzas, Nuevitas, Santiago, and Cienfuegos to exercise supervision over outgoing vessels bound for the United States, its insular possessions or dependencies; at Vera Cruz, Tampico, and Progreso, Mexico, for the disinfection of vessels at those ports bound for the United States, insuring their freedom from infection and thus preventing undue detention at the United States ports; at 7 fruit ports in Central and South America, for the enforcement of the Treasury Regulations on vessels engaged in the fruit trade, for the purpose of preventing their detention at quarantine in the United States which detention would result in the destruction of their perishable cargoes; in the offices of the United States consuls in the ports of Colon and Panama to sign bills of health of vessels leaving those ports for United States ports, and at the same time to transmit all available information concerning health conditions there in accordance with section 2 of the act of Congress approved February 15, 1893; and, finally, in the offices of the United States consuls at La Guaira, Venezuela; Callao, Peru, and Guayaquil, Ecuador, to inspect and sign bills of health of vessels bound for ports not only in the United States but by request of the Panama Government of vessels bound for ports in that Republic.

I deem it my duty to invite attention to the somewhat anomalous condition as regards authority for quarantine work on the Mexican border. At the three principal crossings from Mexico into the United States quarantine inspection stations are established by the State of

Texas, which, under the present law, the State has a legal right to do. Under the national quarantine law this Service has a right of surveillance over these stations and is also required to give aid, so far as may be necessary, to the State quarantine authorities. Under these two provisions of national law, officers of the Public Health and Marine-Hospital Service have also been stationed at the three principal crossings. The State, having but a small appropriation available, has gladly accepted the assistance of the Service, which has established detention camps and otherwise provided quarantine protection at these points.

With the exercise of great care and tact there has been no friction between the two sets of officers, nor between the Bureau and the State health authorities of Texas, but in the exercise of its rights the State has occasionally placed restrictions upon travel which have seemed excessive and which the Bureau could not consent to assist in enforcing, though requested to do so.

The officers and employees, the necessary equipments, and the principal expenditures necessary for maintaining the quarantines, have been borne by the United States, the State maintaining principally its physicians at the stations, who, it must be stated, have sedulously and faithfully performed their duties, accepting the help of the Service, the situation thus offering none of the conditions mentioned in the act of Congress approved February 15, 1893, under which the Government may demand and enforce exclusive control.

The control, however, of a land quarantine between two neighboring republics presents problems different from those arising at maritime quarantine stations, and in the solution of these problems the neighboring republic must be taken into account, and great tact and diplomacy is necessary to secure the friendly cooperation of its authorities in preventing the invasion of the United States by the disease which threatens.

Certain well-defined practical measures can be best enforced in the neighboring republic, and embarrassment can readily result if when efforts to this end are being made by the national authorities and in a manner to avoid offense the State authority precipitately adopts measures looking only to its own protection, such as total exclusion of passenger traffic, or exclusion with provisos which can not be looked upon with acquiescence by the authorities of the neighboring republic.

In the minds of the Mexican authorities, therefore, during the past year there must have been some confusion, as they were obliged to deal both with the United States and the State of Texas, and in fact protests against the action of the State have been received from the superior board of health of Mexico at the Bureau.

With regard to maritime quarantine in the United States proper, the administration of the 40 stations belonging to the Service has been conducted with facility and with a diminished restraint upon commerce. The administration of the stations which have been turned over to the National Government by the action of States or municipalities, such as Savannah, Ga., the 17 quarantine stations of Florida, the quarantine service in North Carolina, and Maine and New Jersey has been of a character evidently satisfactory both to the State and local authorities and to the commercial interests. The dealings of the Bureau with these stations have certainly been more easy and more effective than when they were under State or municipal control. In fact, it would

easily add to the facility and effectiveness of the national quarantine law if all the quarantine stations of the United States were operated by the National Government. There has been no fault found with the effective administration of the stations which are now operated by the State and local authorities, and I am pleased to say there is a fraternal spirit of hearty cooperation, yet the Bureau continues to receive numbers of suggestions looking toward making the quarantine service of the United States entirely national, and since the law passed only two years ago authorized the health authorities of the States to call a conference at any time with regard to quarantine matters it would seem that if provision were made for the retention in the Service and and with their present emoluments of efficient local or State quarantine officers, thus giving them the benefit of attachment to a Service which is devoid of politics and has an assured tenure of office, much of the opposition to making all quarantine national would be removed.

The facilities possessed by this Service for the management of the quarantine stations of the country and the administration of the quarantine laws are illustrated in the reports of the two quarantine divisions of the Bureau. The officer in charge of one of these divisions has complete control of all the maritime quarantine stations in the United States proper, to which he gives his almost exclusive attention, the exceptions being the rare occasions when there may be an epidemic in the United States. This division (domestic quarantine) is always presided over by an officer who has had practical experience himself and who has what might be practically termed a "board of quarantine commissioners" in the sanitary board of the Bureau composed of five officers, to which board are frequently referred questions of moment which are promptly and satisfactorily settled in accordance with the most recent scientific developments regarding epidemic diseases. The quarantine regulations prepared by this board, with one or two special members added thereto, have demonstrated their value from a practical and scientific standpoint in their administration, and their value has been furthermore shown by the adoption of their principles and even details by State authorities, and in one or two instances by foreign authorities. The findings of the International Plague Conference in Paris last year are in accordance with the quarantine regulations of the United States and during a recent quarantine convention of the authorities of the British West Indies, in the Barbados, the domestic quarantine regulations of the United States were adopted, and have been published in the report of the conference.

The Bureau is constantly training men specially for the administration of quarantine stations by a course of special instruction in the Hygienic Laboratory and in practical work at the stations themselves under superior officers, so that material is constantly on hand in the event of an officer detailed to a quarantine station showing a want of adaptability or whose health might require his relief for substitution by other officers of experience and special training.

The control of quarantine by this Service in Porto Rico, Hawaii, and the Philippines has been made comparatively easy because of these stations belonging to a broad system in which the work of an officer at one port is recognized and accredited by the officers at the other ports, or should failure of cooperation appear anywhere the Bureau is promptly informed and any difference readily settled.

ISTHMIAN CANAL ZONE.

As shown in the report of the division of foreign and insular quarantine, as soon as it was evident that the United States was to come into possession of the Isthmian Canal Zone, realizing that pending completion of transactions there should be official cognizance of health conditions both there and in neighboring South American and Central American ports, with your approval and by order of the President officers were detailed in the offices of the United States consuls at Panama and Colon, and reports of these officers published in the Public Health Reports gave much desired information. At the same time officers were detailed to the United States consulates in Callao, Peru, and Guayaquil, Ecuador, two ports from which there was especial danger—from plague in the one and yellow fever in the other.

Soon after, through the accredited minister of Panama to the United States, request was made that the officers in these said ports (Callao and Guayaquil) should exercise the same surveillance over vessels bound for Panama as over vessels bound for United States ports, a request gladly acquiesced in for the sake of protection to the Panama Canal Zone.

Subsequently, the Government of Panama turned over the administration of their local quarantine at Panama to the regularly commissioned officer of this Service there stationed. Eventually the administration of all matters relating to sanitation as well as quarantine was assumed by the Isthmian Canal Commission, and requests have been made upon this Bureau for the detail of certain officers, four in number, particularly for quarantine administration. The senior of these officers has been made chief of the quarantine, under the chief sanitary officer of the Canal Zone, who is himself an appointee of the Isthmian Canal Commission. Officers of this Service reported by request to the chairman of the Isthmian Canal Commission, who in turn directed them to report to the chief sanitary officer.

On account of the prevalence of plague in Peru and yellow fever in Ecuador prompt action with regard to quarantine was absolutely necessary, and the Service, with your consent, has practically given all these officers to the Isthmian Canal Commission. It is to be hoped, however, that this arrangement may be considered but temporary, and that the Commission itself will desire that the maritime quarantine be conducted by this Service, as it is in our other possessions. There is much dependence by the authorities of the Canal Zone upon the work of the officers of this Service in Chile, Peru, Ecuador, and Venezuela, as well as various West Indian and Central American ports, and it would maintain the harmony of the whole maritime quarantine service if some arrangement were made similar to that now existing in the Philippines and in Porto Rico and Hawaii.

It should be remarked that under the Spooner law the salaries of the officers detailed by the Bureau and given over to the Isthmian Canal Commission are still paid by the Service.

SCIENTIFIC RESEARCH AND SANITATION.

In the report from the division of scientific research and sanitation will be found many items of great interest, to some of which reference has already been made. This section of the report deals with

the various conventions which have been held during the year in which the Service has participated, and gives account of the special investigations made into the cause of outbreaks of typhoid and spotted fever; the sanitation of railway coaches and Pullman cars; inquiry into insanitary dwellings and the rehousing problem in foreign cities; the First Anti-Mosquito Convention; the National Association for the Prevention of Tuberculosis; The Porto Rican Anemia Commission; the enforcement of the law regulating the sale of vaccine, serums, and antitoxins; and the operations of the Yellow Fever Institute.

All matters of scientific import involving sanitary problems are referred to this division, which is rapidly growing in importance and usefulness, and which also has administrative charge of the Hygienic Laboratory.

HYGIENIC LABORATORY.

The report of the director gives in detail an account of the research and other scientific labors conducted in the Laboratory, among which were the examination of vaccines and serums under the provisions of an act approved July 1, 1902; experiments on car sanitation; examination of pathologic specimens from various stations of the Service; examination of cases of suspected plague at quarantine stations; examination of drugs and chemicals for the purveying depot of the Service at New York; preparation of a considerable portion of the Service exhibit at the Louisiana Purchase Exhibition; the investigation of various diseases, as yellow fever, the malarial fevers, hook-worm disease, tuberculosis, etc.; the testing of microscopes and microscopic lenses, etc.

Typhoid fever and drinking water.—The assistance of the Service having been invoked to investigate an outbreak of typhoid fever at Lexington, Va., the water supply was investigated, and a bacillus similar in morphology and reaction to the *B. typhosus* was isolated from the water.

Investigation of disinfecting agents.—Several investigations of the germicidal efficiency of various commercial compounds were conducted for various bureaus of the Treasury Department, and in addition an extensive research was made into the germicidal effects of chloride of lime and chloride of zinc.

Division of zoology.—The following subjects were investigated in this division: Spotted fever in Montana, hook-worm disease in various parts of the United States, the intestinal parasites of Pennsylvania miners, the intestinal parasites of insane patients in governmental and State institutions, the dwarf tapeworm (*H. nana*), and the trematode parasites of man.

Division of pharmacology.—The following subjects were investigated in this division: Experiments with nitriles, experiments with alcohols, experiments with quinine derivatives, and the examination of drugs and chemicals for determination of their pharmacopoeial purity and potency.

New building.—It will be recalled that the new laboratory was provided by act of Congress approved March 3, 1901, with an appropriation of \$35,000, the functions of the laboratory being declared to be "for the investigation of infectious and contagious diseases and matters relating to the public health." Five acres of the reservation occupied by the Naval Museum of Hygiene, old Naval Observatory grounds,

was also made available. The new building was completed and the keys turned over to the Bureau on July 21, 1903. The building was occupied for laboratory purposes on March 10, 1904. The cost of the building was approximately \$35,000. The cost of equipment was in the neighborhood of \$13,000.

Since the building was appropriated for another act of Congress (July 1, 1902) provided for the enlargement of its functions by the addition of an advisory board and three new divisions, namely, those of zoology, pharmacology, and chemistry. An appropriation for an additional building was included in the Treasury Department estimates for the present fiscal year, but was not granted. The need for additional room has become acute to meet present pressing necessities. Ultimately there will doubtless be needed a building for each one of the four divisions of the laboratory, namely, the three just mentioned and the division of bacteriology and pathology, but it is proposed to ask of Congress appropriations for these buildings only as their necessities become manifest. One new building should be provided for at once.

Bulletins.—Four bulletins have been issued during the year and others are in course of preparation.

STANDARD UNIT FOR DIPHTHERIA ANTITOXIN.

In the laboratory examination of diphtheria antitoxin for purity the product can be satisfactorily tested by ordinary culture tests and animal inoculations, but in determining the potency the want has long been felt of a standard unit. There has been no such unit produced heretofore in the United States, and the American Medical Association and the American Pharmaceutical Association have both passed resolutions requesting the Service to prepare a standard antitoxic unit for diphtheria antitoxin. In this request the manufacturers of the product have also united.

The director of the Hygienic Laboratory has therefore been directed to prepare such a unit, and the work is progressing rapidly, and it is hoped that it will be ready for issue within a few months. Manufacturers have up to this time been employing Ehrlich's method and Ehrlich's standard toxin for standardizing their products, but owing to the necessity of importing the standard toxin and the time necessarily consumed in the importation, the results have been only fairly accurate, and variations in technic have still further impaired the accuracy of the determinations. The errors have been slight, it is true, but it is felt that in a matter of such moment the determinations should be as nearly absolutely accurate as it is possible to render them.

OFFICIAL SANITARY CONFERENCES.

During the fiscal year the transactions of the first annual conference of the Service with State health authorities were published. The second annual conference was held June 3, 1904, 22 States and Territories being represented. Resolutions were passed expressing confidence in the present measures in force with regard to plague in Chinatown, San Francisco, and congratulating the national, State, and municipal authorities on their harmonious action. Committees were appointed from the State health officers upon ten subjects relating to

epidemiology and sanitary science. To these committees will be submitted the several matters affecting the public health which, in the opinion of the Bureau, should receive their consideration.

The relations of the Service with the State boards is now more intimate and cordial than ever, and it should be the policy of the Department and Bureau to engage their activities in the manner above suggested whenever possible to the advantage of both the State boards and the Service. It is evident that at times when large matters of serious import have been confided to some of these committees it would be advisable occasionally to summon them to Washington for consultation. The committees are not large in membership, there being only from three to five on each committee, and it is believed that Congress should authorize the payment of their traveling expenses when consultation with them is desired by the Bureau.

International Sanitary Conference of Paris, 1903.—This conference aimed to consolidate existing conventions and to bring them into accord with the present scientific knowledge of plague and cholera, but more especially plague. An officer of the Service was detailed to represent the United States at this conference in conjunction with officers from the medical departments of the Army and the Navy.

The delegates from the United States, having no plenary powers, signed the convention ad referendum only.

The convention was translated and reviewed in the Bureau and transmitted to yourself with my recommendation for its adoption with certain reservations, being finally transmitted by the Department of State to the United States Senate, where it failed of ratification, owing to the lateness of its presentation. Little doubt is felt, however, that it will be ratified during the approaching session of Congress.

Sanitary Convention of American Republics postponed.—The date for holding the Second General International Sanitary Convention of the American Republics was set by the first convention at March 15, 1904, and the place fixed upon was Santiago de Chile. Owing to the inability of the representatives of the national health services of the United States and presumably Mexico to attend, on account of the work necessary to prevent the recurrence of yellow fever in Mexico and Texas as well as the apparent difficulties in the way of other republics sending representatives, it was decided, after correspondence with the prospective hosts at Santiago de Chile and other countries interested, to postpone the next convention until April, 1905. It is hoped to obtain at that time a full representation, especially of the Central and South American republics particularly interested in sanitation and the elimination of yellow fever, and to further advance upon the lines laid down by the convention, held in Washington; December 2-5, 1902, toward an international agreement looking to the removal of quarantine restrictions upon shipping by the eradication of disease-producing conditions which now obtain in certain ports.

CONCLUSION.

A review of the transactions of the Public Health and Marine-Hospital Service, as recounted in the foregoing and succeeding pages, will show that the Service has fairly entered upon its functions as the national health organization. The various duties, scientific and administrative, outside of Washington find their ready and capable agents

in the well organized, disciplined, and trained officers, commissioned medical officers, a corps of effective acting assistants, and pharmacists. The variety of the duties connected with the Service, so far from embarrassing, is a source of strength, the experience of the officers of one branch making them all the more valuable for duty in other branches of the Service. The administrative Bureau at Washington, organized as it is under the law of 1902, has been made effective not only through the regulations of the general Service, but by special Bureau ordinances recently consolidated in a Bureau manual, with Department approval, clearly defining the duties of each assistant surgeon-general and providing a system of coordination in administration, so that the Bureau in its seven divisions practically works as a unit.

These results have been attained gradually through the school of experience and special study. The perfection of the Bureau organization since the passage of the law of 1902 has been necessarily antecedent to greater activity in connection with the State boards of health and the committees which have been appointed from among them, and it is hoped that the full working of the national health organization, in which is now included by law the association of State authorities, will be rapidly developed.

It should be considered that the Service occupies a position involving a responsible trust, a position given it by Congress and recognized by the State boards of health. It is, therefore, expected to inaugurate and to conduct measures for the benefit of the public health to the extent and with the energy that have been demanded of the National Government in times past by the more thoughtful sanitarians and the medical profession of the United States. Moreover, as will be seen in this report, it has close international relations in health matters, and the stimulating effect of one nation's activity upon that of others is being rapidly demonstrated. It is believed that much may be accomplished through these relations.

It should be borne in mind that the object of our own and other national organizations is not merely the exclusion and suppression of the great epidemic diseases. The contents of this report show that the terror inspired by these—a dread born of ignorance—has given way to a feeling of confidence justified by knowledge and successful contest. Greater attention is now directed to what have been termed the lesser epidemic diseases, which are in reality more fatal and bring far greater distress. In the advancement of civilization the elimination of these more familiar diseases will be an important factor, and the measures to accomplish it will not be quarantine, detention camps, and sanitary guards, but insistence upon sanitary dwellings, in which shall be abundance of air and sunlight, pure water, and safe disposal of all wastes. In the development of these measures new problems, both legal and material, will confront the Service, and it is hoped both the Administration and Congress will give such aid as may be wisely given in the pursuance of its policies. Its organization is believed to be comprehensive and effective, but much remains to be done for the improvement of its several branches.

I have already alluded to the Hygienic Laboratory, of which so much is expected and which may be developed into a hygienic institute second to none. Its development should be gradual, but the new

building requested of the last Congress and again to be asked for is essential to meet the requirements at the present time.

The Bureau force requires the addition of one clerk in the disbursing office as a substitute for the pharmacist now serving under detail from the general Service. The Bureau requires also the services of a law clerk, one well versed in constitutional law and in the laws of the several States relating to medical and sanitary matters. His services would be invaluable in the development of a policy of uniformity or coordination in municipal, State, and national legislation and in deciding problems arising in the Bureau in the administration of present laws and in the framing of desired legislation.

During the past year I invited your attention to the restrictions under existing law upon the editions of the Service publications, and with your approval a joint resolution was prepared, which was passed by the Senate, enabling the Department to publish in sufficient number the reports and bulletins of the Service. The joint resolution has been referred to the House of Representatives, and it is confidently hoped that it will be enacted into law, thus enabling a wider distribution of the information collected by the Bureau, the demand for which by those interested in furthering the cause of public health is so greatly in excess of the supply.

I have the honor to remain, respectfully,

WALTER WYMAN,
Surgeon-General.

DIVISION OF PERSONNEL AND ACCOUNTS.

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REPORT OF THE DIVISION OF PERSONNEL AND ACCOUNTS.

By H. D. GEDDINGS,

Assistant Surgeon-General, Public Health and Marine-Hospital Service, in temporary charge.

SIR: I have the honor to transmit herewith the following report of the division of personnel and accounts for the fiscal year ended June 30, 1904:

PERSONNEL.

COMMISSIONED OFFICERS.

At the beginning of the fiscal year July 1, 1903, the commissioned corps, including the Surgeon-General, consisted of 109 officers, as follows:

Surgeon-General	1
Assistant surgeons-general	6
Surgeons	24
Passed assistant surgeons	27
Assistant surgeons	51

Surg. R. D. Murray died November 22, 1903, and P. A. Surgs. H. D. Geddings, C. P. Wertenbaker, and J. C. Perry were promoted to the grade of surgeon.

Eleven assistant surgeons, M. J. White, L. D. Fricks, V. G. Heiser, W. C. Hobdy, W. C. Billings, J. W. Kerr, D. E. Robinson, G. M. Corput, T. F. Richardson, W. W. King, and C. Ramus, were promoted to the grade of passed assistant surgeon.

Asst. Surg. C. E. Decker died October 21, 1903; Asst. Surg. H. C. Russell died March 2, 1904, and one assistant surgeon was dismissed from the Service by Department letter of June 16, 1903.

As a result of the examination held by a board of commissioned medical officers convened to meet in Washington June 15, 1903, nine candidates passed a successful examination and were commissioned assistant surgeons in this Service.

Four candidates were successful in passing an examination before the board of commissioned medical officers convened to meet in Washington, D. C., April 4, 1904, and all have been commissioned assistant surgeons in this Service.

The corps at the close of the fiscal year, June 30, 1904, consists of 118 officers, as follows:

Surgeon-General	1
Assistant surgeons-general	6
Surgeons	25
Passed assistant surgeons	36
Assistant surgeons	50

PHARMACOLOGIST AND ADVISORY BOARD, HYGIENIC LABORATORY.

In accordance with the provisions of an act of Congress approved July 1, 1902, entitled "An act to increase the efficiency and change the name of the United States Marine-Hospital Service," Dr. Reid Hunt was, on March 1, 1904, appointed chief of the division of pharmacology, Hygienic Laboratory, and entered upon duty.

The term of service, one year from July 1, 1902, of Prof. Frank F. Westbrook, of the University of Minnesota, as a member of the advisory board of the Hygienic Laboratory having expired by limitation, he was, on August 11, 1903, reappointed for a period of five years from July 1, 1903.

NONCOMMISSIONED OFFICERS.

Sanitary inspectors.—Two sanitary inspectors served during the entire fiscal year, namely, J. Y. Porter at Key West, Fla., and R. I. Bowie at Nagasaki, Japan.

Acting assistant surgeons.—At the beginning of the fiscal year there were 179 acting assistant surgeons on duty; 57 were appointed, 3 died, and 39 were separated from the Service by limitation of appointment and resignation, leaving on duty at the close of the fiscal year 194 such officers.

Medical inspectors.—Two medical inspectors served during the entire year, namely, E. F. Smith at Honolulu, Hawaii, and J. McDonald at San Francisco quarantine. One was appointed temporarily at Honolulu during the illness of E. F. Smith, her services being discontinued without prejudice October 9, 1903.

Internes.—At the beginning of the fiscal year there were 10 internes on duty at the various marine-hospital stations; 14 were appointed and 13 separated from the Service by reason of resignation, leaving 11 on duty at the close of the fiscal year.

Pharmacists.—At the beginning of the fiscal year there were on duty 46 pharmacists, divided as follows:

Pharmacists of the first class	16
Pharmacists of the second class	22
Pharmacists of the third class	8

Four pharmacists of the third class were promoted to the grade of pharmacist of the second class; 1 pharmacist of the second class was transferred to the Immigration Service; 5 appointments were made to the position of pharmacist of the third class; 2 resigned, and 1 was reinstated, leaving the number at the close of the fiscal year 49, divided as follows:

Pharmacists of the first class	16
Pharmacists of the second class	25
Pharmacists of the third class	8

Pilots and marine engineers.—At the beginning of the fiscal year there were on duty 11 pilots and 21 marine engineers. During the year 2 pilots were separated from the Service by resignation and 5 were appointed. One marine engineer was discharged for cause, 7 resigned, and 10 were appointed, leaving the total number on duty at the close of the year as follows:

Pilots	14
Marine engineers	23

Hospital attendants.—At the beginning of the fiscal year 577 hospital attendants were employed in the various marine hospitals, quarantine stations, and on epidemic duty, not including 69 such employees on duty in the Philippine Islands.

During the year 1,266 were appointed, 1,200 were separated from the Service by reason of limitation of appointment, resignation, desertion, and dismissal, leaving at the close of the year 643, as shown by the following table:

Branch of Service in which employed.	In Service July 1, 1903.	Appointed during year.	Separated from Service.	In Service June 30, 1904.
Marine-Hospital Service	342	762	683	421
Quarantine	199	213	269	143
Epidemic	36	291	248	79
Total	577	1,266	1,200	643
Philippine Islands	69	74	83	60

The quarantine table includes 17 attendants employed in the Territory of Hawaii and 26 in the island of Porto Rico.

The epidemic table includes 1 attendant at Matanzas and 9 employed on the disinfecting steamer *Sanator* at Habana.

RECAPITULATION.

Commissioned medical officers	118
Chiefs of divisions, Hygienic Laboratory	2
Sanitary inspectors	2
Acting assistant surgeons	194
Medical inspectors	2
Pharmacists	49
Pilots	14
Marine engineers	23
Attendants	643
Total	1,047

BOARDS CONVENED.

Forty-one boards were convened at different times and at various stations throughout the United States for the physical examination of officers of the Revenue-Cutter Service and applicants for entrance thereto.

One board was convened for the examination of passed assistant surgeons to determine their fitness for promotion to the grade of surgeon.

Nine boards were convened for the examination of assistant surgeons to determine their fitness for promotion to the grade of passed assistant surgeon.

Four boards were convened at different stations for the examinations of pharmacists of the third class to determine their fitness for promotion to the grade of pharmacist of the second class.

July 8, 1903, a board was convened at Washington, D. C., for the purpose of considering the preparation of plans for inspection of vaccine farms and antitoxin establishments.

July 27, 1903, a board was convened to consider the request of Asst. Surg. C. E. Decker to be placed on waiting orders on account of phys-

ical disability, as a result of which he was placed on waiting orders from August 1, 1903.

August 24, 1903, a board was convened to meet at Washington, D. C., for the purpose of considering the question of correcting certain errors and amending other matters in regard to the uniform regulations.

January 7, 1904, board was convened to meet at Washington, D. C., for the purpose of considering the revision of medical books on contract and preparation of list of professional books, etc.

March 27, 1904, a board was convened to meet at Washington, D. C., to consider the construction or purchase of boarding steamers for the quarantine stations at San Francisco, Cal., and Port Townsend, Wash.; also to consider the type of launch for boarding or inspection of vessels at Key West quarantine and at Habana, Cuba; also to consider the feasibility of repairing the hull of the launch *Spray* at Delaware Breakwater quarantine, and placing new motive power therein.

April 4, 1904, a board was convened to meet at Washington, D. C., for examination of candidates for admission as assistant surgeon.

A board was convened to meet at Washington, D. C., for the purpose of making inquiry into unbecoming conduct of an officer and, upon recommendation of this board, a board of investigation was subsequently convened and the findings of the said board were laid before the Secretary and received his approval.

OFFICERS DETAILED TO REPRESENT SERVICE AT MEETINGS OF MEDICAL AND PUBLIC HEALTH ASSOCIATIONS.

Asst. Surg. Gen. G. T. Vaughan: Meeting of American Medical Association at Atlantic City, N. J., June 7-10, 1904.

Asst. Surg. Gen. H. D. Geddings: Meeting of International Sanitary Conference, Paris, France, October 10, 1904. Upon adjournment to proceed to Berlin and Frankfort, Germany, and London, England; meeting of American Medical Association at Atlantic City June 7-10, 1904.

Surg. Preston H. Bailhache: Meeting of American Public Health Association, Washington, D. C., October 26, 1903.

Surg. H. R. Carter: Conference of quarantine officers at New Orleans, La., March 14, 1904.

Surg. P. M. Carrington: Meeting of American Medical Association at Atlantic City, N. J., June 7-10, 1904.

Surg. J. C. Perry: Convention to Consider the Question Involved in Mosquito Extermination at New York, N. Y., December 16, 1903.

Passed Asst. Surg. M. J. Rosenau: Meeting of the Society of American Bacteriologists at Philadelphia, Pa., December 29-30, 1903; meeting of tuberculosis committee, College of Physicians, Philadelphia, Pa., March 28, 1904; meeting International Association for Study and Prevention of Tuberculosis at Atlantic City, N. J., June 6, 1904; meeting of American Medical Association, Atlantic City, N. J., June 7-10, 1904.

Passed Asst. Surg. J. M. Eager: Meeting of International Congress of Hygiene and Demography at Brussels, Belgium, September 3-8, 1903.

Asst. Surg. T. F. Richardson: Conference of State health officers and county health officers of Texas at Austin, Tex., March 31, 1904.

Asst. Surg. J. W. Ames: Meeting of Washington State Medical Association, July 12-14, 1904.

Dr. Ch. Wardell Stiles: Meeting of Medical Association of Mississippi at Jackson, Miss., April 20, 1904.

ACCOUNTS.

VOUCHERS PASSED FOR PAYMENT AND SETTLEMENT.

The records of the Bureau show that 19,391 vouchers were passed during the year. Of this number 17,761 were sent to the special disbursing agent for payment, 830 were transmitted to the Auditor for the Treasury for examination and settlement, and 800 were examined and referred to the Auditor, they having previously been paid by special disbursing agents of the Service.

FINANCIAL STATEMENT—RECEIPTS AND EXPENDITURES, PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE, FOR THE FISCAL YEAR ENDED JUNE 30, 1904.

The balance of the Public Health and Marine-Hospital fund available at the commencement of the fiscal year was \$486,638, and the receipts from all sources \$937,257.61. The expenditures were \$1,168,252.36.

Summary Public Health and Marine-Hospital fund.

Balance, July 1, 1903.....	\$486,638.00
Receipts, tonnage tax.....	825,911.41
Repayments, care foreign seamen, medical and hospital supplies, immigration service, etc.....	111,346.20
Total.....	1,423,895.61
Expenditures:	
Maintenance of stations.....	\$853,759.31
Salaries, Surgeon-General's office.....	39,540.00
Fuel, lights, and water.....	70,550.95
Repairs to public buildings.....	62,346.32
Furniture and repairs.....	4,233.41
Heating apparatus.....	5,342.52
Purveying depot.....	132,479.85
	1,168,252.36
Balance, July 1, 1904.....	255,643.25

Preventing the spread of epidemic diseases.

Balance July 1, 1903.....	\$489,051.99
Expenditures July 1, 1903, to June 30, 1904:	
Foreign medical service, salaries and miscellaneous, China, Japan, Italy, etc., and Central America.....	\$43,176.63
Habana, Cuba (including outlying district), salaries, subsistence, supplies, and miscellaneous.....	32,838.08
Sanitary inspection in United States, salaries, travel expenses, and miscellaneous.....	55,815.14
Yellow fever, maintenance of detention camps, precaution against outbreak, salaries, medical and hospital supplies, disinfectants, etc.....	18,205.93
Mexico, salaries, supplies, etc.....	13,073.52
Nome, Juneau, Sitka, Alaska, medical supplies, vaccine, salaries, etc., smallpox inspections.....	2,300.13
Texas border inspection, account smallpox, salaries, and miscellaneous.....	46,052.39
	211,461.82
Balance June 30, 1904.....	277,590.17

Appropriations, quarantine stations.

Chesapeake Bay Quarantine Station, act March 3, 1893:	
Balance July 1, 1903	\$6,935.00
Balance June 30, 1904	6,935.00
Gulf Quarantine Station, act March 3, 1899:	
Balance July 1, 1903	824.58
Balance June 30, 1904	824.58
South Atlantic Quarantine Station, act June 4, 1897:	
Balance July 1, 1903	453.02
Balance June 30, 1904	453.02
Savannah (Ga.) Quarantine Station, act June 6, 1900:	
Balance July 1, 1903	282.20
Balance June 30, 1904	282.20
Reedy Island Quarantine Station, act March 3, 1901:	
Balance July 1, 1903	867.95
Balance June 30, 1904	867.95
Port Townsend Quarantine Station, act March 3, 1901:	
Balance July 1, 1903	39,976.30
Balance June 30, 1904	39,976.30
South Atlantic Quarantine Station, act June 28, 1902:	
Balance July 1, 1903	3,329.60
Balance June 30, 1904	3,329.60
Mayport, Fla., act June 28, 1902:	
Balance July 1, 1903	1,500.00
Balance June 30, 1904	1,500.00
Miami, Fla., act June 28, 1902:	
Balance July 1, 1903	6,747.76
Expended July 1, 1903, to June 30, 1904	6,519.17
Balance June 30, 1904	228.59
Boca Grande, Fla., act June 28, 1902:	
Balance July 1, 1903	500.00
Balance June 30, 1904	500.00
Pensacola, Fla., act June 28, 1902:	
Balance July 1, 1903	4,530.61
Expended July 1, 1903, to June 30, 1904	358.49
Balance June 30, 1904	4,172.12
San Diego, Cal., act June 28, 1902:	
Balance July 1, 1903	7,498.55
Expended July 1, 1903, to June 30, 1904	7,480.00
Balance June 30, 1904	18.55
Pensacola, Fla., act March 3, 1903:	
Balance July 1, 1903	14,000.00
Expended July 1, 1903, to June 30, 1904	1,210.90
Balance June 30, 1904	12,789.10
San Diego, Cal., act March 3, 1903:	
Balance July 1, 1903 (amount of appropriation)	6,000.00
Balance June 30, 1904 (amount of appropriation)	6,000.00
Honolulu, Hawaii, act March 3, 1903:	
July 1, 1903, appropriation	80,000.00
Transferred to Supervising Architect	80,000.00

Statement of appropriations, quarantine service, 1904.

Amount of appropriation	\$325,000.00
Repayment care foreign seamen, etc.....	1,609.36

Total available.....	326,609.36
Expenditures July 1, 1903, to June 30, 1904.....	324,092.39

Balance, June 30, 1904.....	2,516.97
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Deficiency appropriation: Repairs to floating property, quarantine service, 1904.

Amount of appropriation	\$9,500.00
Expended	9,053.51

Balance June 30, 1904	446.49
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Name of station.	Maintenance of stations, salaries, subsistence, supplies and miscellaneous.	Medical and hospital supplies.	Total.
Reedy Island, Del.....	\$24,257.66	\$1,737.65	\$25,995.31
Delaware Breakwater, Del.....	12,600.98	647.24	13,248.22
Cape Charles, Va.....	17,098.81	952.48	18,051.29
Cape Fear, N. C.....	8,197.30	933.15	9,130.45
South Atlantic.....	12,034.34	212.33	12,246.67
Brunswick, Ga.....	5,857.70	571.34	6,429.04
Gulf, Miss.....	22,249.44	1,656.14	23,905.58
Tampa Bay, Fla.....	6,690.37	592.65	7,283.02
San Diego, Cal.....	8,526.33	54.11	8,580.44
San Francisco, Cal.....	42,917.88	1,051.90	43,969.78
Port Townsend, Wash.....	17,665.52	251.33	17,916.85
Columbia River, Oreg.....	13,180.81	500.74	13,681.05
Savannah, Ga.....	14,582.35	1,060.67	15,643.02
Key West, Fla.....	5,131.79	6.60	5,138.39
Hawaii, H. I.....	37,139.64	1,575.85	38,715.49
Cumberland Sound.....	4,665.00	.....	4,665.00
St. John's River, Fla.....	2,075.72	.....	2,075.72
Biscayne Bay, Fla.....	5,856.64	71.50	5,928.14
Boca Grande, Fla.....	3,384.81	19.19	3,404.00
Cedar Keys, Fla.....	723.00	.....	723.00
St. Georges Sound, Fla.....	3,280.02	.....	3,280.02
Santa Rosa, Fla.....	11,527.27	1,199.91	12,727.18
Porto Rico.....	27,656.06	1,084.77	28,739.83
Miscellaneous.....	2,247.94	366.96	2,614.90
Total	309,545.88	14,546.51	324,092.39

ADMINISTRATIVE DETAILS—CIRCULAR LETTERS.

CIRCULAR LETTER RELATIVE TO REINSTATEMENT OF EMPLOYEES.

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, August 13, 1903.

To commissioned medical officers and acting assistant surgeons:

Your attention is called to the following instructions from the Secretary of the Treasury, under date of July 25 and July 28, 1903, respectively, relative to submitting recommendations for reinstatement of employees in this Service and to making recommendations in each case for probationary appointments:

"Hereafter in forwarding requests for reinstatement in the United States Public Health and Marine-Hospital Service you will give the legal residence, date and cause of separation, position occupied by, and rate of compensation paid to the person seeking reinstatement, and also military or naval record, if any."

"Hereafter it will be necessary for the medical officers in command to make recommendation in each case for the probationary appointment of a person serving under temporary appointment and whose name is placed on the eligible list if it is desired to continue such person in the service."

Respectfully,

WALTER WYMAN, Surgeon-General.

CIRCULAR LETTER RELATIVE TO TRANSMITTING SEMIANNUAL LIST OF ATTENDANTS.

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, December 1, 1903.

To commissioned medical officers and acting assistant surgeons,

Public Health and Marine-Hospital Service:

Referring to paragraph 704 of the regulations of this Service, relative to transmitting semiannual list of attendants at your station, their duties and compensation, you are hereby directed to forward said report to this Bureau in duplicate.

The report required from custodians by paragraph 556 of the regulations should also be forwarded to the Bureau in duplicate.

WALTER WYMAN, *Surgeon-General.*

With this summary of the operations of the Division of Personnel and Accounts, I remain,

Respectfully,

H. D. GEDDINGS,

Assistant Surgeon-General in Temporary Charge.

The SURGEON-GENERAL.

DIVISION OF MARINE HOSPITALS AND RELIEF.

REPORT OF DIVISION OF MARINE HOSPITALS AND RELIEF.

By L. L. WILLIAMS,

Assistant Surgeon-General, Public Health and Marine-Hospital Service, in charge.

SIR: I have the honor to submit the following report of the operations of the division of marine hospitals and relief for the fiscal year ended June 30, 1904:

RELIEF OF SEAMEN.

During the year 58,556 seamen were treated at the various relief stations of the Service. Of these, 14,303 were treated in hospital, and 44,253 were treated as out-patients. Four hundred and fifteen thousand two hundred and ninety-two days relief in hospital were furnished. The excess in number of days relief over the previous year was 31,903.

RELIEF STATIONS.

During the year the Service controlled and operated 22 hospitals, all of which are owned by the Government. The transfer of equipment from Dutch Harbor, Alaska, to Nome, Alaska, has been completed, and the hospital at the latter port is in full operation, the buildings assigned to the Service having been recently repaired.

INSPECTION OF STATIONS.

The following relief stations were inspected during the year and appropriate action on the inspection reports taken by the Bureau: Vicksburg, Miss.; Baltimore and Solomons, Md.; Brunswick and Savannah, Ga.; Mobile, Ala.; Fernandina, Jacksonville, Port Tampa, Pensacola, and Key West, Fla.; Vineyard Haven, Gloucester, Boston, and New Bedford, Mass.; Detroit, Mich.; Manitowoc, Wis.; Philadelphia, Pa.; Purveying Depot, New York, N. Y.; New Haven and New London, Conn.; Newport and Providence, R. I.; Portsmouth, N. H.; Bath and Boothbay Harbor, Me.; Norfolk, Fredericksburg, Richmond, and Newport News, Va.; Washington, Elizabeth City, Beaufort, Newbern, and Wilmington, N. C.; Georgetown and Charleston, S. C.; Wheeling, W. Va.; Gallipolis and Cincinnati, Ohio; Louisville and Paducah, Ky.; Evansville, Ind.; Cairo, Ill.; St. Louis, Mo.; Memphis, Tenn.; New Orleans, La.

MONTHLY STATEMENT OF EXPENDITURES.

The monthly statement of expenditures (Form 1956) received from all the relief stations of the Service during the year were duly examined and filed for reference.

AID TO OTHER BRANCHES OF THE GOVERNMENT.

Revenue-Cutter Service.—Seven hundred and twenty-eight applicants for enlistment were examined, of whom 128 were rejected.

Steamboat-Inspection Service.—One thousand eight hundred and twelve pilots were examined as to visual capacity and 126 rejected.

Life-Saving Service.—One thousand one hundred and sixty-one surfmen were examined and 37 rejected.

Light-House Service.—Twelve applicants for enlistment were examined and 3 rejected.

Civil Service Commission.—One thousand four hundred and three applicants for appointment physically examined and 89 rejected.

Isthmian Canal Commission.—Two employees physically examined and none rejected.

Immigration Service.—Two employees physically examined and none rejected.

PHYSICAL EXAMINATIONS OF MERCHANT SEAMEN.

Physical examinations were made of 604 American merchant seamen, of whom 88 were rejected, and of 6 foreign seamen, of whom 3 were rejected.

EXAMINATIONS OF DRUGS.

The following orders were issued during the year:

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, April 1, 1904.

SIR: You are hereby directed, in so far as the facilities at your disposal will permit, to make an examination as to the purity and potency of such drugs, pharmaceutical preparations, etc., as may from time to time be forwarded to you for that purpose from the Bureau or the Medical Purveyor of the Service. Reports of the findings in each case should be forwarded to the purveyor through the Bureau.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

DIRECTOR HYGIENIC LABORATORY,
PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, D. C.

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, April 1, 1904.

SIR: Copy of a communication of even date addressed to the Director of the Hygienic Laboratory, relative to examination of drugs, etc., is inclosed herewith for your information, and you are directed to forward to the laboratory for examination any drug or preparation thereof which you have reason to believe fails to conform to the standard of the United States Pharmacopœia or the contract requirements.

As the divisions of the laboratory in which this examination would be made are not yet thoroughly organized, you are directed to correspond with the Director of the laboratory, and ascertain the extent to which this work can be undertaken at the present time.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

MEDICAL PURVEYOR,
PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
378 Washington street, New York, N. Y.

SANATORIUM FOR CONSUMPTIVE SEAMEN, FORT STANTON, N. MEX.

Report of Surg. P. M. Carrington, in command.

UNITED STATES PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Fort Stanton, N. Mex., August 2, 1904.

SIR: I have the honor to report as follows regarding the transactions of this station for the fiscal year ended June 30, 1904:

Statistics.

Patients under treatment July 1, 1903.....	150
Patients admitted during the year.....	236
Patients under treatment June 30, 1904.....	192
Patients discharged during the year.....	194
Ages of patients treated during the year:	
Under 25 years.....	56
Between 25 and 34 years.....	134
Between 35 and 44 years.....	117
Between 45 and 54 years.....	61
Over 54 years.....	18
	— 386
Heredity in patients admitted during the year:	
History of tuberculosis in parents.....	105
No history of tuberculosis in parents.....	281
Stage of disease (first stage meaning where no consolidation nor excavation can be discovered; second stage meaning considerable involvement and consolidation without excavation; third stage with excavation):	
First stage.....	34
Second and third stages.....	200
Nontubercular.....	2
Area of involvement as shown by physical examinations:	
Right lung only.....	20
Left lung only.....	15
Both lungs.....	346
Doubtful diagnosis of tuberculosis.....	5
	— 386
General condition at arrival "good," meaning well nourished and without grave complications; "bad," meaning rather poorly nourished or with complications not necessarily fatal; "very bad" meaning much emaciated or with grave complications such as organic heart disease, chronic nephritis, or advanced laryngeal involvement):	
Good.....	83
Bad.....	159
Very bad.....	144
	— 386
Tubercle bacilli:	
Were not present in the sputum of.....	26
Were present in the sputum of.....	360
Record of patients who had pulmonary hemorrhages:	
Before arrival only.....	107
After arrival only.....	15
Both before and after arrival.....	28
The greatest number of patients under treatment at one time during the year was 208.	
Condition of 194 patients at time of discharge:	
Apparently cured.....	15
Arrested.....	9
Improved.....	87
Unimproved.....	19
Died.....	62
Two patients, non-tubercular, admitted and discharged cured.....	2
	— 194

Duration of stay and character of cases.

Character of case.	Longest stay.			Shortest stay.			Average stay.		
	Years.	Months.	Days.	Years.	Months.	Days.	Years.	Months.	Days.
Cured	2	7	4	.....	5	18	1	.....	17
Arrested	1	5	15	.....	2	18	.....	11	12
Improved	3	.....	21	.....	.....	9	.....	7	12
Unimproved	3	7	14	.....	.....	2	.....	8	11
Died	2	9	16	.....	.....	4	.....	5	10

I have divided the patients into two classes: List A, which consists of patients who were under treatment at the beginning of the fiscal year; and List B, which consists of patients who were admitted during the year.

LIST A.—Patients under treatment at beginning of fiscal year.

	Cured.	Ar-rested.	Im-proved.	Unim-proved.	Died.	Total.
Cases discharged	14	5	41	9	23	92
First stage	8	.....	2	1	1	12
Second and third stages	5	6	39	8	22	80

Patients under treatment July 1, 1903. 150
 Remaining under treatment June 30, 1904. 58

Discharged during the year. 92

LIST B.—Patients admitted during year.

	Nontu-bercular (cured).	Cured.	Ar-rested.	Im-proved.	Unim-proved.	Died.	Total.
Cases discharged	2	1	4	46	10	39	102
First stage .....	.....	1	4	8	2	1	16
Second and third stages .....	.....	.....	1	37	8	38	84

Admitted during the year. 236
 Discharged during the year. 102

Remaining at end of year. 134

Complications.

Syphilis	50	Fistula in ano	2
Cardiac valvular disease	39	Renal calculi	1
Functional disease of heart	17	Keratitis	1
Nephritis	7	Cataract	1
Rheumatism	1	Nasal polypi	4
Anæmia	1	Occlusion of nares	2
Diabetes	2	Occlusion of lachrymal duct	2
Hydropericardium	1	Lateral spinal curvature	1
Hydrocele	2	Lumbago	1
Appendicitis	1	Hemorrhoids	36
Rupture of tympanic membrane	1	Varicocele	13
Hæmatoma testicle	1	Adenitis	16
Deafness	4	Hernia	13
Pleurisy with effusion	8	Varicose veins of leg	5
Fracture of ribs	1	Hepatitis and ascites	1
Hydropneumothorax	1	Acute mania	2
Gastritis	3	Incontinence of urine	1
Necrosis of lower jaw	2	Epilepsy	1
Chronic diarrhea	3	Otitis media	2
Polyuria	9	Effusion of knee joint	2

α Nephritis.

Complications—Continued.

Aneurism	1	Eczema	1
Peritonitis	1	Necrosis of rib	1
Ununited fracture inferior maxilla	1	Biliary calculi	1
Pyopneumothorax	2	Iritis	1
Pneumothorax	2	Atony of bladder	1
Cystitis	1	Stricture	4
Epididymitis	1	Perirectal abscess	2
Asthma	4	Partial paralysis	1

Organs other than lungs affected.

Larynx	47	Intestines	25
Testicles	1	Hip joint	2
Knee joint	1	Vertebrae	1
Ribs	1	Tarsal bones	1
Trachea	1	Pharynx	2
Esophagus	1	Peritoneum	2
Meninges brain	1	Ischiorectal abscess	1
Fistula in ano	2	Lymph glands	2

Length of time under treatment at sanatorium.

Over two years	9
Between one and two years	27
Between six and twelve months	45
Between three and six months	47
Under three months	66

Total 194

Of the 194 patients discharged during the year 24 were under treatment for less than thirty days. The results in these cases were as follows:

Improved	4
Unimproved	5
Died	15

Total 24

During the year we have had under treatment, in addition to the above, consumptive officers and employees as follows:

Under treatment July 1, 1903	10
Admitted during the year	11

Total 21

Still under treatment June 30, 1904 11 |

Left during the year 10 |

Condition of those leaving at time of discharge:

Apparently cured	2
Improved	7
Unimproved	1

Our results are very conservatively stated, and under any usual nomenclature would show a much larger proportion of cured cases. Several months ago, noting the large number of patients discharged without physical or other signs of disease, or only with signs indicating healed lesions, but who had been under treatment only from three to six months, and were for this reason recorded as "improved" cases, I adopted the plan of calling such cases "arrested," and the "improved" cases herein recorded include a great many which might properly be recorded as "arrested" cases.

It is to be hoped that the efforts which are being made to devise a uniform system of nomenclature for tuberculosis will be successful, and that the various terms employed will thereafter always mean the same thing wherever and by whomsoever used. I wish to renew the recommendation contained in my report of 1903, that some law be secured or regulation adopted which will give greater control over patients and enable us to retain them under treatment for a sufficient period to insure recovery or demonstrate their incurability.

During the fiscal year under consideration the rainfall has been greatly less than during any year in the life of the sanatorium, and notwithstanding the comparatively small number of cured cases reported this year, our patients have undoubtedly done better, as a rule, than heretofore. While we have a considerable percentage of deaths, this is not remarkable when the character of cases admitted is taken into consideration.

TREATMENT.

The treatment has been, in the main, as heretofore, hygienic, dietary, and symptomatic. I have experimented with the bacillary treatment introduced by Doctor Maher, of Connecticut, and, while his treatment has undoubtedly been of benefit in a certain proportion of cases, the observations have not been sufficiently prolonged to warrant an opinion at this time of its value.

The daily breathing exercises have been continued and have proven of undoubted value, and the drill has also promoted good discipline.

Nose and throat clinic.—The nose and throat clinic, which was for a time necessarily suspended, owing to shortage in medical officers, was resumed November 16, since which date the following cases have been treated:

Disease.	Cases.	Disease.	Cases.
Rhinitis:		Laryngitis:	
Acute	5	Acute	6
Chronic	2	Chronic	4
Hypertrophic, rhinitis	5	Tuberculosis of larynx	17
Rhinitis chronic and pharyngitis chronic	16	Tuberculosis of larynx and pharyngitis	
Empyema of the frontal sinus	1	<i>sicca</i>	1
Perforation of septum nasi (tuberculous)	1	Syphilis:	
Epistaxis	2	Secondary of pharynx	2
Pharyngitis:		Ulceration of septum, nasi	1
Simple acute	20	Otitis:	
Simple chronic	12	Media suppurative, acute	2
Subacute	2	Media suppurative, chronic	12
Atrophic or <i>sicca</i>	5	Media suppurative, chronic and ec-	
Follicular or granular	3	<i>zema</i> of both auricles (moist)	1
Tonsillitis, follicular	4	Media, catarrhal	2
Uvulitis	1	Perichondritis, auriculæ	2
Stomatitis	2	Cerumen, impacted	5

Operations.

Disease.	Cases.	Disease.	Cases.
Removal of spur from septum, nasi	5	Removal nasal polypi (14)	1
Removal posterior end of middle turbi-		Removal nasal polypi (8)	1
<i>nate</i>	1	Paracentesis auriculæ	2
Removal anterior end of middle turbinate	5	Hajlek's operation for deflected septum	1

Several cases of laryngitis included in the report of nose and throat work were treated by applications of bacillus X of Maher with marked benefit.

REPAIRS TO BUILDINGS, ETC.

This being in the natural course of events the last annual report of the operations of this sanatorium which I shall render, it seems appropriate to give a brief résumé of the work under this head which has been accomplished during my detail. When I assumed command of the station in January, 1901, very little in the way of repairs had been accomplished except interior repairs to building No. 1, commanding officer's quarters, minor repairs to building No. 2, passed assistant surgeon's quarters, and certain essential repairs to the hospital building.

During the past three and a half years nearly all the buildings have been reshingled, and No. 4 has been overhauled and repaired for occupancy by convalescent patients. Building No. 5 has been converted into a power plant and steam laundry. In this building we have placed an ice plant, with cold storage rooms and dairy facilities and an additional boiler which furnishes steam heat for buildings Nos. 4, 5, and 7. In this building also has been placed a dynamo, which supplies light to all buildings and the corrals and a considerable portion of the grounds.

Building No. 6 has been converted into a modern kitchen and dining room, with subsistence storeroom, bakery, and attendant's quarters.

Building No. 7, which in January, 1901, consisted of bare stone walls left after the building was destroyed by fire during the army occupancy, has been rebuilt, and is now occupied as an executive building and laboratory.

Building No. 9 has been remodeled and the first floor contains the post-office, two storerooms, and a commodious tobacco and barber shop, while the upper floor has been converted into a light and airy hall, which is used for reading room and chapel, with book and other necessary rooms adjoining.

Buildings Nos. 10 and 11, which were in utter dilapidation, have been converted into well-lighted and ventilated dormitories, and are now occupied by ambulant consumptives, No. 11 containing also a modern and well equipped operating room with dressing room and surgical ward.

No. 13 has been entirely done over, and is so arranged that it may be used for either single men or families. It is now occupied by two assistant surgeons, several patients who are commissioned officers of other services and beneficiaries of this Service, and employees detailed in the office. These, except one commissioned officer who has a family, constitute the "bachelor officers' mess."

All these buildings have been supplied with modern plumbing, and on buildings Nos. 1, 2, 3, and the hospital commodious and artistic porches have been erected.

The corrals have been completely done over; a sufficient number of stalls and feed rooms were erected in the horse corral; hay sheds and milking sheds with cement floors have been erected in the cow corral. The corrals are also lighted by electricity and dangerous oil lanterns dispensed with.

An electric motor has been installed and is used for pumping water. In connection with the electric light plant over 1,000 lights and an electric fire alarm system have been installed.

The expenses of repairs to buildings since I assumed command of the station, including contracts, material, labor, and salary of architect, have been \$134,525.86.

WATER SUPPLY.

During the year just ended the question of water supply has been most perplexing, and the scarcity of water has been a source of constant anxiety. The failure of the rains during the summer of 1903, and the almost total absence of snow in the mountains during the past winter, deprived us of our former supply of water from the Rio Bonito. The old army wells became almost dry and practically our only source of supply has been some little springs which rise in the bed of the Rio Bonito about 1 mile west of the buildings. The water from these springs has been carried through a ditch to the old sutler's store, used in the early days of the sanatorium as a chicken yard, and thence by means of a flume across the river to a wooden tank at the army well; thence it has been pumped to small reservoir on little round-top hill. With great economy this has been sufficient to supply our urgent domestic needs, but we have been unable to store any water, and night after night we have gone to bed with less than 5,000 gallons of water in the reservoir, a condition, which especially during the windy season, has given rise to the gravest apprehensions, for, had a fire occurred at this time, we would have been absolutely helpless. On more than one occasion it has been a question of going without coffee or dispensing with the morning ablutions. The uncertainty of the water supply and its inadequacy led to a recommendation for boring a new well. This recommendation was approved by the Bureau; the well has been bored, cased, and the pump is now being placed. A partial test showed that this well should furnish not less than 40,000 gallons of water daily, running the pump both night and day. Additional wells for irrigating the garden and alfalfa fields should be bored, and it is probable that in boring such wells, water will be developed sufficiently near the surface to permit pumping by means of windmills. Earth reservoirs may be constructed at small cost and water stored for irrigating purposes. Such reservoirs can also be used as fish ponds, and thus add to our dietary an important article of food, which we are at present unable to use by reason of our distance from sources of supply.

MILK SUPPLY.

The shortage of milk referred to in my report of 1903 is less than heretofore. During the fiscal year 1903 we produced 19,120 gallons of milk. During the fiscal year ended June 30, 1904, we produced and used 24,053 gallons of milk and a small quantity of butter. The increase in the milk supply has been accomplished by reason of the addition to our herd, by natural increase, of a number of cows and in the natural order of events the number of milk cows will continue to increase, and it is only a matter for a short time when, without any additional purchases, we will be able to produce all the milk we can consume.

A purchase of milk goats has been authorized by the Bureau in order to add to the milk supply and give occupation to the patients willing to undertake their care. There has been some difficulty in securing goats of the right kind, but negotiations are now under way and within a few weeks the experiment will be begun.

RANGE OF BEEF CATTLE.

Our beef herd continues our most promising investment. The number reported on hand on my report of 1903 was 369. The property return for the same period showed 401. This difference is accounted for by the transfer on the property return of a number of Jersey steers from the dairy to the range herd and by probable error in count of a few head.

The present record of our cattle is as follows: We have branded this season 149 calves; 46 head of cattle have been killed for beef, and 10 head have died. We have remaining 474 head. There are also 110 head of cattle in the dairy herd. A portion of these 110 have heretofore been reported as having been transferred to the beef herd. By a recent authority granted by the Bureau all cattle are now entered on the property return as "Cattle." This total of 584, therefore, includes all range stock and dairy stock, consisting of bulls, cows, 2-year olds, yearlings, and calves.

The 46 head of cattle killed dressed 17,563 pounds, worth at contract price \$1,229.31.

The original investment of beef cattle, including the bulls recently purchased, was approximately \$6,800, and although the herd has not grown sufficiently large to entirely supply us with beef, yet in the past two years we have killed and used beef equal in value to almost one-third of the original investment.

The progress of our cattle investment may be better shown by the following statement:

Original investment	\$6,800.00
Value of beef consumed	2,192.48
Net investment	4,607.52
<hr/>	
Present value of the herd:	
9 bulls (3 station raised), at \$75.....	675.00
3 bulls, thoroughbred.....	1,000.00
462 head of cows and young stuff at an average valuation of \$25.....	11,550.00
Total	13,225.00
Net investment	4,607.52
Showing an actual profit in three years of.....	8,617.48

From this sum should be subtracted salary of one cowboy for three years and salt fed to range cattle, but even after subtracting these items, amounting to approximately \$1,200, there remains a net profit of over \$7,400, which is a most excellent showing, and our herd of cattle is generally conceded by cattlemen in this vicinity to be as fine as any in the Territory, if not the very finest.

HORSES.

Our experiment in horse raising, begun three years ago, has been most successful. We now have 18 colts, 7 of which will be 3 years old in the spring of 1905.

HOGS, POULTRY, ETC.

We have no difficulty in raising all the hogs we can feed. During the present year we have killed a number of hogs which have dressed 11,602 pounds and furnished 1,140 pounds of lard. These products at the contract prices were worth \$756.80.

Belgian hares, while considered a delicacy by a great many people, were not popular with our patients, and, as the expense of raising them was considerable, I killed and served those on hand, amounting to 325 pounds.

Our poultry yard has furnished 425 pounds of dressed chickens, 75 pounds of dressed turkey, and 610 dozen eggs. Our flock of chickens now number 555; 365 of which have been raised in the past three months.

The flock of pigeons numbers over 100, and we have a constant supply of squabs for use at the hospital.

FARM AND GARDEN.

The farm and garden work, owing to the extreme scarcity of water, has been most disappointing, but the young orchard of fruit trees has not only been kept alive, but is growing and a portion of the orchard should bear fruit next year.

LIBRARY.

The new library and reading room, recently occupied, is a very valuable means of entertainment for the patients. The books have been neatly numbered, classified, arranged, and catalogued, and a system of cards provided, so that the patients may receive books and at the same time the librarian may keep a proper account of them.

SANATORIUM ADMINISTRATION.

The growth of the sanatorium has rendered it necessary to systematize the work, assigning to each officer his portion, which I have done in the following order:

Assignment of medical officers and schedule of daily duties.

The commanding officer will assume charge of the entire sick call, assisted by Acting Assistant Surgeon O'Reilly.

Assistant Surgeon Traak is detailed in charge of the laboratory, including the routine and special work. He will also have supervision over necropsies and all other pathological work.

Assistant Surgeon Ebert is detailed in charge of the physical examination room, and will have charge of all clinical records of every description.

Acting Assistant Surgeon Laws is detailed to assist Assistant Surgeon Ebert in the physical examination room during the forenoon, and in the afternoon as assistant in the pathological work of the laboratory.

Acting Assistant Surgeon O'Reilly will act as assistant to the commanding officer at morning sick call, and will review the medical journals, marking articles of interest for the commanding officer.

Acting Assistant Surgeon Walker is detailed in charge of the nose and throat clinic, and will receive and treat such cases as may be referred to him by any of the officers making sick call; he is also detailed as attending surgeon to the attendants and other employees, and will have charge of the surgical clinic.

Acting Assistant Surgeons Laws, O'Reilly, and Walker will alternate month about in making evening sick call, the object of the evening sick call being to meet such emergencies as may arise after morning sick call is made and which could not, without prejudice to the patient, remain unattended until the following morning.

OFFICER OF THE DAY.

The junior medical officers will serve successively as officers of the day, and will be on duty as such for twenty-four hours, beginning at 6 o'clock a. m. It will be the duty of the officer of the day to make inspection of all wards, tents, and rooms occupied by patients between 8 and 9 o'clock a. m., and at 10.30 a. m. he will report the result of such inspection verbally to the commanding officer. It will also be the duty of the officer of the day to see arriving patients, assign them to beds, and see that they are otherwise properly cared for, and to answer emergency calls.

The officer of the day will also make a general round of inspection, between the hours of 9 a. m. and midnight, with the object of ascertaining whether or not good order is prevailing; this round will extend from the vicinity of the hospital to the corrals, and the officer of the day will exercise his judgement about entering buildings. The tent village should always be included in this inspection. In case of necessity, the commanding officer may be called at any hour to receive report concerning any matter which, in the opinion of the inspecting officer, may require immediate attention, and a verbal report may be made the following morning of matters not especially urgent, but still requiring attention.

The officer of the day will not be excused from duty, and will not absent himself from the occupied portion of the reservation during his twenty-four hours of duty; he should remain in easy call, and when not in the executive building should indicate on the office bulletin board where he may be found.

OFFICE HOURS.

Medical officers, pharmacists, and office assistants will report at the office of the commanding officer at 8.30 a. m and 1.30 p. m. This order, however, shall not pre-

vent the officer of the day completing his inspection in the proper manner, even though to do so may prevent him reporting before 9 a. m.

All affected by this order will be expected to remain at their posts of duty, unless excused, from 8.30 a. m. until noon, and from 1.30 p. m. until the day's business is completed.

Office hours on Sunday from 8.30 a. m. until noon only.

OFFICIAL DAILY SCHEDULE.

Surgeon Carrington.—8.30 a. m., office; 8.40 a. m., hospital sick call; 9.30 a. m., ambulant sick call. From 10.30 until noon the commanding officer may be found in his office to receive necessary reports and attend to the requests of patients and others; he will also be in his office from 1.30 p. m. to the close of business.

Assistant Surgeon Trask.—8.30 a. m., at office, and then to laboratory room until 12 o'clock noon, and from 1.30 p. m. until the close of business also in the laboratory.

Assistant Surgeon Ebert.—8.30 a. m., office, then to examination room until noon. From 1.30 p. m. until the close of business in examination room working on records.

Acting Assistant Surgeon Laws.—8.30 a. m., office, then to examination room until noon. At 1.30 p. m. in the laboratory until excused by Assistant Surgeon Trask.

Acting Assistant Surgeon O'Reilly.—8.30 a. m., office, then to accompany the commanding officer on sick call. At 1.30 p. m., at office, for going over medical journals and such other work as may be verbally assigned to him.

Acting Assistant Surgeon Walker.—8.30 a. m., office until 9 a. m., seeing employees who may have been reported sick by the pharmacists. From 9 to 12 o'clock at the nose and throat clinic. From 1.30 p. m. until completion of the work at the surgical operating room.

Pharmacists.—Must also report at the office at 8.30 a. m. and afterwards will proceed to their usual duties.

NECROPSIES.

As a rule necropsies will be held at 1.30 p. m., immediately after officers have made their afternoon report, and on necropsy days all other work after noon will be omitted, except in cases of emergency.

All officers will be expected to be present at necropsies, but the officer in charge of the surgical clinic will complete his surgical dressings before reporting at the necropsy room.

NOTES.

The officer in charge of the surgical clinic will send to the laboratory specimens from cases under his care and of which it is desired to have an examination made. He will consult the officer in charge of the laboratory as to the character of such specimens.

Inspection and muster will be held on Saturdays at 7 a. m.

The officer of the day may call, or cause to be called, any other officer in case assistance is needed, and any officer so called shall respond promptly.

Nothing in this order shall be construed as authorizing discontinuance of work prior to 4 p. m.

This order, essentially, is still in force, although some of the officers mentioned therein are no longer on duty here, and it has proven very satisfactory in operation.

In order to keep a check on the patients the head nurse and the night watchman each have a roll book, showing the building and bed occupied by each patient. Roll is called at morning sick call, after which absentees are looked up and accounted for, and the night watchman again makes roll call by bedside visitation at 9 p. m. The double daily inspection by the officer of the day has had a most beneficial effect.

Our records have been greatly improved during the past three years, and we keep a number which are not required by the Regulations, but which greatly facilitate our work and its tabulation. I inclose a specimen of the clinical chart at present in use. A careful record is kept of all work done in the laboratory, nose and throat clinic and examination rooms, and the officers in charge of these divisions of work make daily, monthly, and other periodical reports to me of their work.

LABORATORY.

During the last ten months of the fiscal year the following work was done in the laboratory:

Sputum examinations.....	1,112
Urine examinations.....	540
Quantitative examinations for sugar in urine.....	5

Hemoglobin estimations according to Fleischel	124
White blood cell counts.....	13
Red blood cell counts.....	2
Examinations of blood for the plasmodium malarie	2
Quantitative and qualitative gastric juice analysis.....	1
Fecce examinations.....	8
Microscopic examinations of exudates, transudates, and pus	9
Necropsies	52

Not all the necropsies have been written up to date, for the reason that we have been unable with the force at our disposal to work continuously at them.

Besides the foregoing routine laboratory work, considerable other work has been carried on, as follows: Experiments to establish the condition of our hospital and dormitories with reference to their possible infection with tubercle bacilli; the administration of the tuberculin test to our dairy herd of 60 milk cows; work done to ascertain morphological, cultural, and pathological character of the bacillus X of Maher; also the examination of milk from our different dairy cows to establish the absolute and relative value of their yield.

A full and detailed report of the work done in the laboratory, prepared by the officer in charge, is submitted as an exhibit with this report.

DURABILITY OF CURE.

Being myself a beneficiary of this sanatorium, its conduct, operations, and aims have become very dear to me, and when I begin to talk or write of it it is very difficult for me to limit my remarks to proper proportions.

There is one question of paramount importance to the individual consumptive—namely, the durability of cure. We are unfortunately not able to secure the subsequent histories of a good many of our patients. I do, however, receive an occasional letter from patients, who have been away from the sanatorium for a few months, and I recently received one from a patient discharged over three years ago, which is of so much interest as bearing on this question of the durability of the cure, as to warrant, I think, an extract from it being included in this report.

[Copy of letter from Capt. John S. Simmons, discharged March 31, 1901.]

OFFICE OF STEAMER JOHN S. SIMMONS,
Paducah, Ky., July 4, 1904.

MY DEAR SIR: * * * I have never had any trouble with my lungs since I left Stanton, and have taken the best of care of myself, but have worked very hard, as this business [operating towing boats, Tennessee and Cumberland rivers] requires. I do not weigh as much by about ten or twelve pounds. This valley is a very hard climate to live in, as it is malarial, and I am touched with it all the time here. I would like to locate in a healthier climate, but my business is all here, and it is impossible to leave it long at a time. I have a large capital invested in my two plants, and you can see that I am a very busy man.

I can only think that Stanton did me a great deal of good and that I received all the attention and courtesies that were due me at that institution, and I shall not live long enough to ever forget the kind treatment I received at the hands of the persons in charge of the fort at the time of my stay at that place.

Very truly, yours,

JOHN S. SIMMONS.

Dr. P. M. CARRINGTON,
Fort Stanton, N. Mex.

RECOMMENDATIONS AND CONCLUSION.

For the consideration of the Bureau and in furtherance of the industrial idea for sanatoria in general and this sanatorium in particular, I wish to suggest that shops be established for the manufacture and repair of articles of furniture, etc., for the use of the sanatorium and for sale or barter under the proposed law relating to the subject. We have a variable number of patients, who are competent to do cabinet work in its several branches. If the commanding officer might be granted authority to employ such patients in accordance with their physical and technical ability, in a shop organized to do cabinet and repair work, paying them by the piece or job, many articles of furniture now purchased by the Purveyor and shipped from New York at considerable expense could be manufactured at the station, and all of our

repair work could be done in such a shop. Surplus articles thus made might be disposed of by sale or barter in accordance with the law which it is proposed to ask Congress to pass. The advantage of such a shop, operated on such a basis, will be primarily to give employment to convalescent patients, and the sale and barter of articles thus manufactured may operate to reduce very materially the running expenses of the sanatorium.

In any regulations made under such a law authority should be granted the commanding officer to use the moneys and materials accruing from the sale or barter of the products of the shop to purchase materials for additional articles to be manufactured or otherwise at his discretion, due care being had to matters of accountability for funds, and provisions being made to pay the piece wages of patients employed out of moneys so received.

Such a law should also permit the sale or barter of surplus and useless products, such as hogs and other live stock. Such sale and barter, so far from being opposed by the citizens of the vicinity, will be eagerly welcomed by them and will afford them a ready market for their products, as well as one in which they may procure in exchange for their products better grades of stock than they could otherwise afford to own.

The industrial shop suggested above has in it a great many possibilities which will develop according to circumstances and the exigencies of the station, and I believe the idea is well worthy of your careful consideration.

Respectfully,

P. M. CARRINGTON, *Surgeon, in Command.*

The SURGEON-GENERAL.

[Inclosure.]

REPORT OF LABORATORY, FORT STANTON, BY ASSIST. SURG. J. W. TRASK.

UNITED STATES PUBLIC HEALTH
AND MARINE-HOSPITAL SERVICE,
Fort Stanton, N. Mer., July 1, 1904.

SIR: I have the honor to make the following report of work done in this laboratory during the ten months from September 1, 1903, to June 30, 1904, in which I have been in charge of the work:

When first assigned to the laboratory I was the only one working in it, and even then not all of my time was devoted to it, inasmuch as sick call and surgical dressings for a while constituted part of my assignment. The laboratory at this time undertook to prepare stained specimens from the various organs and tissues of each body brought to necropsy, and with but one or two exceptions, such as in cases where relatives claimed the body for burial, a necropsy has been held on all patients who died at this sanatorium during the past ten months. It was then found that the work was more than one man could do, and an assistant, an undergraduate medical student, was placed in the laboratory to make routine urine and sputum examinations, which by this time constituted a considerable amount of work, inasmuch as we had nearly 200 patients whose sputum and urine were regularly examined every three months, and in cases where tubercle bacilli were absent, few, or hard to find, and these form a considerable percentage of the whole. Repeated examinations on successive days were made, and besides this, patients are continually being admitted and discharged, and in both of these cases the urine and sputa are examined. Later, a medical officer, Acting Assistant Surgeon Markoe, was detailed to assist in the sputum and urine examinations. In the meantime the laboratory had been carrying on special experimental and research work, and another medical officer, Acting Assistant Surgeon Laws, was detailed to assist in the preparation of tissues and stained specimens from necropsies. These three assistants spent only a part of their time in the laboratory, on an average not over two hours a day; the remainder of their time was occupied with other work.

Besides the routine laboratory work considerable other work has been carried on, as follows: Experiments to establish the condition of our hospital and dormitories with reference to their possible infection with tubercle bacilli; the administration of the tuberculin test to our dairy herd of 60 milk cows; work done to ascertain morphological, cultural, and pathological characteristics of the bacillus X of Maher; also the examination of milk from our different breeds of dairy cows to establish the absolute and relative value of their yield.

REPORT No. 1.

FORT STANTON, N. MEX., *January 22, 1904.*

SIR: I have the honor to submit the following report of special work done in laboratory "to establish the condition of our hospital and other dormitories, with reference to their possible infection with tubercle bacilli."

The following work was done in compliance with the first request of the following instructions:

UNITED STATES PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Fort Stanton, N. Mex., September 7, 1903.

SIR: I desire to have you take up as soon as practicable experiments to establish the condition of our hospital and other dormitories with reference to their possible infection with tubercle bacilli.

The resources of the laboratory, now in your charge, and including such a number of rabbits and guinea pigs as may be necessary, are at your disposal for this purpose. Individual cages for the animals to be used in the experiment are being made in order to avoid the error of having them confounded with other animals.

Upon the completion of these experiments you should render a report in detail, together with your conclusions.

Respectfully,

P. M. CARRINGTON,
Surgeon in Command.

Asst. Surg. J. W. TRASK,
Fort Stanton, N. Mex.

The experiments to ascertain whether or not our hospital was infected with tubercle bacilli were begun on September 14, 1903.

September 14, 1903, test tubes and petri dishes were washed clean; the test tubes were plugged with cotton and with the petri dishes sterilized with dry heat for one and one-half hours in the oven of a common kitchen range. (We have no dry-heat oven in the laboratory.)

September 15, 1903, pieces of wood, 3 inches long by one-fourth inch wide, by one-sixteenth inch thick, were placed in the covered petri dish and sterilized in dry-heat oven until they were charred brown.

September 16, 1903, made a salt solution of 6 parts sodium chloride and 1,000 parts of distilled water and boiled it in flask for one-half hour; then poured the salt solution into the sterilized test tubes to a depth of 3 inches and again sterilized tubes with salt solution for one hour in Arnold's steam sterilizer. They were then removed and allowed to cool. Then took to the hospital a copper basin and alcohol lamp, the test tubes with salt solution, and wood splinters in petri dish in which they had been sterilized. Sterilized a pair of artery forceps in boiling water by means of alcohol burner and copper basin. Then, with sterile forceps, grasped sterile splinter of wood, moistened wood in boiling water, then let it cool for few seconds, and with moist end of splinter dug dirt out of cracks and corners, then dropped the splinter along with the collected dust and dirt, which amounted to a mass larger than a marble, into a test tube containing the sterile salt solution. Then replaced cotton plug in tube and sterilized the mouth of tube with flame. This procedure was gone through with in each separate room in which dust was collected. The artery forceps were boiled between each operation. The amount of dust collected each time was sufficient to make the salt solution look muddy.

The test tubes were numbered from 1 up.

Test tube No. 1 contained dirt from the southwest and northwest corners of the floor of the hospital ward and from a crack in the center of the room.

Test tube No. 2 contained dirt from corners of floor and baseboard of hospital toilet room, in which the closets are located.

Test tube No. 3 contained dirt from corner and cracks in floor of room No. 7, occupied by negro patients.

The above tubes were shaken well and allowed to stand for two hours. They were again shaken and the salt solution and dirt in suspension poured into a sterile petri dish, each tube into a separate dish. Antitoxine syringes of 5 c. c. capacity and needles were sterilized in boiling water and allowed to cool. The solution and suspended dirt were then drawn from each dish separately into the sterile syringes, and guinea pigs were inoculated both hypodermatically and intraperitoneally with the solution, one pig hypodermatically and one pig intraperitoneally with each solution. The technique was as follows: The pigs were held by an assistant; hair over part of left side of abdomen was cut close with scissors, the clipped area and

surrounding hair was soaked with bichloride of mercury, 1:700; syringe needle was then passed through the skin to inoculate hypodermatically and through the entire abdominal wall in inoculating intraperitoneally.

The pigs were numbered from 1 up and when inoculated were placed in hutches also numbered from 1 up. Each hutch was marked with a card upon which were recorded the numbers of the pigs in it and also when, with what, and how much they had been inoculated. It also gave a description of the markings and colors of the pigs. In each hutch were put only the two which had been inoculated with the same tube of salt solution.

The pigs were used as follows:

Pig No. 1.—Large brown boar was inoculated subcutaneously with 2 c. c. of contents of tube No. 1 and placed in hutch No. 1 September 16, 1903.

Pig No. 2.—Black boar with brown spots was inoculated intraperitoneally with 2 c. c. of contents of tube No. 1 and placed in hutch No. 1 September 16, 1903.

Pig No. 3.—Black boar with white face was inoculated subcutaneously with 2 c. c. of contents of tube No. 2 and placed in hutch No. 2 September 16, 1903.

Pig No. 4.—Black boar with brown spots was inoculated intraperitoneally with 2 c. c. of contents of tube No. 2 and placed in hutch No. 2 September 16, 1903.

Pig No. 5.—Black boar was inoculated subcutaneously with 2 c. c. of contents of tube No. 3 and placed in hutch No. 3 on September 16, 1903.

Pig No. 6.—Black boar with brown spots was inoculated intraperitoneally with 2 c. c. of contents of tube No. 3 and placed in hutch No. 3 September 16, 1903.

On September 18, 1903, the head nurse at the hospital swept the wards and halls with a broom. (Schnauder is a robust, German, uninfected nurse, apparently in perfect health.) He then blew his nose into a clean piece of toilet paper and brought it to the laboratory in a clean paper filler, such as is used here in the hand sputum cups. The paper with discharge from nose was soaked and agitated in 0.6 per cent salt solution and was treated otherwise with the same care and technique as was used with the collections from the hospital floors. It was injected into guinea pigs as follows:

Pig No. 7.—Brown, black, and white boar was inoculated subcutaneously with 2½ c. c. of mixed salt solution and secretion from nurse's nose and placed in hutch No. 4 September 19, 1903.

Pig No. 8.—Black and brown sow was inoculated intraperitoneally with 2 c. c. of mixed salt solution and secretion from nurse's nose and placed in hutch No. 4 September 19, 1903.

November 12, 1903.—In order to ascertain the presence or absence of infection of the spray room, where many cases have their nares, pharynges, and larynges treated daily, and where there is necessarily much coughing, sneezing, and spraying, scrapings were made with a sterilized potato knife from the floor. The surface of the boards was scraped and what small amount of dirt had collected in the cracks was dug out from the area of the floor which is directly in front of where the patients sit and which, therefore, would be most apt to be infected. The collection thus made by scrapings was treated in exactly the same way as had been that collected from the floors at the hospital, and was injected into guinea pigs as follows:

Pig No. 11.—Brown and black sow was inoculated subcutaneously with 3 c. c. of salt solution and scrapings from spray room floor and placed in hutch No. 6 on November 12, 1903.

Pig No. 12.—Cream-colored boar was inoculated intraperitoneally with 3 c. c. of salt solution and scrapings from spray room floor and put in hutch No. 6 on November 12, 1903.

NECROPSY REPORT OF INOCULATED PIGS.

Pig No. 1.—Killed with chloroform January 13, 1904; was well nourished; body heat present; liver of rather dark color; spleen slightly pale; splenic follicles showed distinctly; kidneys normal; lymph glands not enlarged; heart filled with fluid blood; macroscopically no signs of disease were found; spleen was hardened in alcohol, and sections made from it showed neither tubercles nor tubercle bacilli.

Pig No. 2.—Well nourished; body heat present; killed with chloroform January 13, 1904; liver dark in color; spleen pale, but follicles easily seen; kidneys apparently normal; lymph glands not enlarged; heart filled with red clots; no macroscopical signs of disease; sections made from spleen showed neither tubercles nor tubercle bacilli.

Pig No. 3.—Well nourished; body heat absent; rigor mortis present; died December 8, 1903; no tubercles nor suspicious areas found anywhere in body; smears made from spleen and liver were entirely negative, and sections made from spleen showed neither tubercles nor tubercle bacilli.

Fig No. 4.—Died December 8, 1903; was well nourished; abdominal organs and heart vessels showed passive congestion; heart filled with red clots; spleen smears were negative as were also sections made from the same organ.

Fig No. 5.—Well nourished; died December 8, 1903; omentum and mesentery rich in fat; vessels of intestines injected; heart filled with red clot; smears made from spleen were negative, as were also sections made from same organ.

Fig No. 6.—Killed with chloroform January 13, 1904; well nourished; body heat present; lymphatic glands not enlarged; liver reddish brown in color; spleen somewhat pale; follicles visible, heart filled with red clots; no tubercle nor suspicious areas found anywhere; sections made from spleen showed neither tubercles nor tubercle bacilli.

Fig No. 7.—Killed with chloroform January 13, 1904; body heat present; well nourished; lymph glands not enlarged; liver reddish brown; spleen slightly pale; follicles of spleen visible; heart filled with fluid blood; no tubercles nor suspicious areas were found anywhere; sections made from spleen were negative.

Fig No. 8.—Died January 3, 1904; well nourished; congestion of small intestines; passive congestion of heart vessels; heart filled with semiliquid blood and currant-jelly clots; no tubercles nor suspicious areas found anywhere; sections of spleen showed neither tubercles nor tubercle bacilli.

Fig No. 11.—Killed with chloroform January 13, 1904; well nourished; lymph glands not enlarged; heart filled with dark fluid blood; no pathological lesions found; sections made from spleen showed neither tubercles nor tubercle bacilli.

Fig No. 12.—Killed with chloroform January 13, 1904; well nourished; lymph glands not enlarged; right kidney contained many small urinary cysts, but was otherwise apparently normal; no pathological lesions other than the urinary cysts were found anywhere in the body, and sections made from spleen showed neither tubercles nor tubercle bacilli.

Of the 10 pigs inoculated, 3 died during the night of December 8, 1903, and one during the night of January 3, 1904. Both of these nights were very cold, and inasmuch as they died on the same nights as other pigs which had never been inoculated, and inasmuch as those which had been inoculated were all well nourished and apparently in good health up to the evening they died, and since no pathological lesions nor cause of death could be found post mortem, there seems no other explanation to be given, and, in my judgment, none needed other than that they died from the effects of cold.

Of the 4 that died because of cold, 3 had been inoculated two months and twenty-one days, and 1 three months and fifteen days previously. Of the 6 which were killed by chloroform anaesthesia 3 had been inoculated three months and twenty-eight days, 1 three months and twenty-five days, and 2 two months and one day previously. The interval between the time of their inoculation and death was in each case sufficient to have at least produced advanced tuberculosis, if not emaciation and death, had there been present tubercle bacilli in the material with which they were inoculated.

The 10 pigs were at time of necropsy without exception well nourished. Not one of them showed the least suspicion of a tuberculous lesion macroscopically, nor did sections of the spleens show any lesions microscopically.

As a check upon the technique, and to make the experiments as complete and thorough as possible, I used 2 guinea pigs as a control. I took sputum belonging to a patient and examined stained specimens of it to make sure of its containing tubercle bacilli. They were present in considerable numbers. I then took some of the sputum and agitated it in 0.6 per cent salt solution and on November 10, 1903, inoculated the two controls with it, using in every detail the same methods and syringes as were used with the other pigs.

Control A was inoculated subcutaneously with $2\frac{1}{2}$ c. c. of the mixture of salt solution and sputum and was put in hutch No. 5.

Control B was inoculated intraperitoneally with $2\frac{1}{2}$ c. c. of the mixture of salt solution and sputum, and as previously stated the same technique was used as had been employed with the other pigs. Control B was placed in hutch No. 5.

Control B died during the night of December 15, 1903, and the necropsy held the next morning showed emaciation; testicles soft; lymph glands of anterior mediastinum enlarged, and in section they were found firm and containing yellowish nodules which composed the greater part of the gland; heart filled with currant-jelly clots; lungs congested and edematous; liver enlarged and mottled greenish yellow and reddish brown, and on section contained many greenish-yellow nodules; spleen many times enlarged and mottled reddish brown and white, and on section the white mottling of the surface was found due to large whitish nodules throughout the spleen; omentum was matted and thickened, adherent to itself in many places, and

contained many pin-head tubercles; mesenteric and retroperitoneal lymph glands enlarged and on section resembled those of the anterior mediastinum; parietal peritoneum contained thickened yellowish patches; smears made from the spleen contained tubercle bacilli in considerable numbers; sections made from spleen showed the presence of tuberculous tubercles and of tubercle bacilli.

Control A was killed by chloroform on January 13, 1904. Necropsy showed emaciation marked. There was a softened caseated nodule which was just about to break at the point of inoculation. Spreads were made from the broken-down matter which escaped from the nodule when punctured, and when stained were found to contain tubercle bacilli. Mesenteric and inguinal glands were enlarged and some of them softened. Spleen was much enlarged and filled with white nodules. Liver contained many pearly nodules scattered throughout. Sections made from spleen showed tuberculous tubercles and tubercle bacilli.

It is seen from the above that the two controls inoculated with known cultures of tubercle bacilli became rapidly tuberculous; that control B lived but one month and five days and was found to have extensive general tuberculosis, and that control A, killed two months and three days after inoculation, was found in the same condition.

CONCLUSIONS.

In a room or building occupied by consumptives the part most apt to become infected is the floor, next to this the baseboards, and then the side walls for a distance of 2 or 3 feet from the floor. This is so because the greater amount of the scattering of bacilli is done by spraying when the patient talks or coughs.

The organisms leave the mouth in minute droplets of saliva and sputum, which, because of their weight, gravitate to the floor. Of course when these droplets dry they may, or rather the bacilli which were in them may, be stirred up in the dust and find lodgement on any and all dust-collecting surfaces and in spider webs. And on the floor the greatest infection will be found in the cracks and corners where dust and dirt collects and remains undisturbed for days, weeks, and perhaps months. The material collected for inoculation was from rooms occupied continually by consumptives in the last stages or from lavatories and the spray room daily used by them. It was removed from cracks and corners of floor, and in each case a considerable amount was scraped up and inserted in each tube of salt solution. The amount was such that had it been infected it was enough to guarantee a sufficient dose.

Since all the pigs thus inoculated were healthy up to the time of their death, and none of them either ante or post mortem showed any sign, symptom, or pathological lesion of tuberculosis, the only conclusion that can be drawn is that no living tubercle bacilli were present in the dirt removed from the hospital rooms and spray room; and since this dirt was taken from the parts of the rooms most exposed and liable to infection, it can further be concluded that no part of the above rooms contained living tubercle bacilli.

Therefore it can be said that the measures employed in the rooms tested are adequate to prevent infecting of floors and baseboards.

The measures used at the hospital are a weekly mopping of the floors with kerosene oil. In the spray room the floor is mopped weekly with bichloride of mercury solution 1:1000 and the room disinfected by formaldehyde gas as generated by a Kuhn generator.

Let the question might be asked as to how long after the mopping with kerosene or bichloride of mercury was the material collected for inoculation, I will state that the scrapings were made five and six days after the moppings, that is, just before it was time for the next application of kerosene or bichloride.

TUBERCULIN TEST OF JERSEY HERD.

In testing out the cattle with tuberculin the routine advised by the Agricultural Department, Bureau of Animal Industry, was followed. The temperature of each cow was taken per rectum at 8 a. m., 10 a. m., 12 noon, 2 p. m., 6 p. m., and at 10 p. m. Immediately after the last temperature 2 c. c. of tuberculin were injected subcutaneously just back of the right shoulder. Then on the following day the temperature was again taken per rectum at 8 a. m., 10 a. m., 12 noon, 2 p. m., 4 p. m., and 6 p. m. Sixty cows were thus tested. One of the cows reacted. Her maximum temperature before injection was 38.4° C. and after injection 40.1° C. Eight days later she was again tested and her maximum temperature before injection was 38.6° C. and after 39.6° C. Thus the rise in temperature was 1.7° C. after the first test and 1° C. after the second. This cow was killed and a necropsy held, but no lesions were found macroscopically. Her remains were burned.

BACILLUS X OF MAHER.

Considerable time was spent in studying the Bacillus X of Maher. Seventy-nine patients were later inoculated with it at their own request, and in all 102 inoculations were made. But inasmuch as this work is not as yet completed a detailed report will be made later.

J. W. TRASK,
Assistant Surgeon, Public Health and Marine-Hospital Service,
In Charge of Laboratory.

P. M. CARRINGTON,
Medical Officer in Command, Fort Stanton, N. Mex.

REPORT OF MILK EXAMINATIONS.

FORT STANTON, N. MEX., July 1, 1904.

SIR: In accordance with your verbal request made about ten days ago, asking that an examination of the milk from the different breeds of milk cows be made to ascertain their relative worth as a food, and especially to determine whether or not there is any difference in the size of the fat globules in the milk from the various breeds, I have the honor to report that I have examined 10 specimens, that there was no appreciable difference in the size of the fat globules in the milk from cows of different breeds. The fat globules varied in each specimen from 1 to 8 micromillimeters in diameter, the greatest number measuring 2 to 3. There were a great number of bacteria in each sample, which would indicate that the milk had not been properly cooled after milking. The Jersey cows were the only ones which produced what is considered a proper percentage of cream. Both the Holsteins and half-breeds (Hereford and Jersey) fell considerably below the normal in cream production. Seven of the 10 specimens of whole milk examined fell below 1.029 in specific gravity, which is considered the minimum for good milk. There were 10 specimens examined, 4 Jerseys, 4 Holstein, and 2 half-breed (Hereford and Jerseys).

The following are the specific gravities:

THE WHOLE MILK.

Jersey.	Holstein.	Half-breed.
1.02842	1.02967	1.029
1.02755	1.02958	1.02997
1.02813	1.02871	.....
1.02784	1.02842	.....

SKIMMED MILK.

1.02958	1.03016	1.02967
1.03117	1.03074	.....

The cream percentages were—

Jersey.	Holstein.	Half-breed.
Per cent.	Per cent.	Per cent.
9.0	8.0	8.3
13.3	7.2	.....
10.77	.....	.....

Respectfully,

J. W. TRASK,
Assistant Surgeon,
Public Health and Marine-Hospital Service,
In Charge of Laboratory.

MEDICAL OFFICER IN COMMAND,
Fort Stanton, N. Mex.

PURVEYING DEPOT AT NEW YORK.

(Report of medical purveyor.)

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL PURVEYOR,
378 Washington street, New York, N. Y., August 10, 1904.

SIR: I have the honor to transmit herewith report of the operations of this station for the fiscal year ended June 30, 1904.

The routine work of the depot has been conducted on similar lines as heretofore, with such changes from time to time as suggested themselves to facilitate the details dependent on the issuing and receiving of supplies and the proper accounting of the same.

The work pertaining to the records kept at the depot has been greatly augmented, with as yet no additional assistance, and which before long will require the detail of one more pharmacist for duty at the depot. The work referred to is that covered by Bureau letter of August 22, 1903, directing that an account be opened with each station of the Service, showing the total cost of supplies issued, as well as the cost of the individual classes as mentioned in the letter above referred to. This work in connection with the accounts kept with other services for supplies issued has been a severe tax, and has been met only by the devoting of considerable time outside of office hours to this particular feature of the office work.

The examination of supplies is now receiving more attention than heretofore, especially pharmacopœial products and other pharmaceutical preparations.

By Bureau order samples of the character above noted are now submitted to the director of the Hygienic Laboratory for examination as to their purity and potency. The examinations thus far conducted have revealed results that can not fail to be of great benefit to the Service in determining the character of supplies offered, and at the same time enabling the Service to secure drugs and their various pharmacopœial preparations of a constant and standard purity.

The personnel of the station as to numbers remains the same as during the previous fiscal year, one resignation having occurred during the year.

The depot has filled requisitions to the number of 718, including, besides stations of this Service, the Immigration Service, Coast and Geodetic Survey, government of the Philippines, storekeeper Treasury Department, as well as the quarantine and epidemic services, which are under the immediate supervision of this Service.

The financial statement follows:

Total cost of supplies for which orders were placed during the fiscal year, inclusive of fuel and packing material (\$1,103.88), which are not accounted for under the head of operating expenses of the depot.....		\$112,953.55.
Medical supplies	\$19,118.09	
Dry goods, etc	19,523.29	
Hospital stores.....	18,658.85	
Surgical dressings, instruments, appliances, and hospital furniture	13,503.82	
Station equipment.....	8,695.89	
Microscopical, bacteriological, and optical apparatus.....	6,744.52	
Disinfecting apparatus and disinfectants	3,266.69	
Medical books and journals	3,261.92	
Kitchen utensils	2,722.10	
Pharmaceutical appliances, etc	2,644.54	
Fire hose and apparatus	2,189.33	
Beds, bedding, etc	2,050.86	
Rubber goods	1,313.59	
Vials	1,194.27	
Wines and liquors.....	1,066.29	
Paints and brushes	865.08	
Toilet and wrapping paper.....	759.81	
Carpets.....	753.06	
Packing materials, etc	748.80	
Flags.....	748.68	
Lumber	718.40	
Chemical glassware, etc.....	497.65	
Purveying depot equipment.....	496.57	
Band instruments	407.73	

Photographic and X-ray apparatus	\$388.58	
Fuel.....	355.08	
Official seal presses, stamps, etc	290.06	
Operating expenses.....		\$8,592.89
Total.....		121,546.44

CR.

By amounts included in above statement authorized by special department approval, payments being made from the several appropriations other than that of Public Health and Marine-Hospital Service:

Quarantine fund	\$2,300.78	
Immigration Service.....	1,056.83	
Epidemic fund	356.70	
Government of the Philippines.....	338.25	
Coast and Geodetic Survey	13.53	
		\$4,066.09
		117,480.35

By amounts due for reimbursements for supplies issued during the year to other services:

Quarantine Service	14,546.46	
Immigration Service.....	6,075.77	
Epidemic Service.....	3,934.93	
Philippine government	1,241.57	
Coast and Geodetic Survey.....	549.31	
Storekeeper Treasury Department	95.14	
		26,443.18

Net expenditures chargeable to Public Health and Marine-Hospital Service	91,037.17
Salaries.....	16,876.00
Commutation	600.00
Total net expense	108,513.17

From the foregoing it will be observed that the total net amount chargeable to the Public Health and Marine-Hospital Service for the year exceeds that of the fiscal year 1903 by \$15,663.31.

This difference can be accounted for by the natural increase in the growth of the Service, and to the work being carried on in connection with sanitation and original research in various parts of the Tropics, for which work microscopic outfits have been furnished during the past year.

The cost of the various classes of supplies issued to stations of the Service during the year is as follows:

Stations of the first class	\$71,082.26
Stations of the second, third, and fourth classes	11,653.83
Quarantine stations.....	16,997.41
Epidemic service.....	3,989.44
Grand total.....	103,723.04
Number of requisitions filled.....	718
Number of packages used in packing.....	8,015
Total weight of supplies shipped..... pounds..	719,431

Respectfully,

HENRY W. SAWTELLE,
Surgeon and Medical Purveyor.

The SURGEON-GENERAL.

NEW HOSPITALS.

Pittsburg, Pa.—Transfer of site from War Department.

[Letter.]

WAR DEPARTMENT,
Washington, May 7, 1904.

SIR: Referring to the request contained in your letter of May 23, last, and to subsequent correspondence on the subject, I transmit herewith an instrument, executed this date, transferring to the custody and control of the Treasury Department, for a marine-hospital site, 5 acres of ground of the arsenal grounds, situated in the city of Pittsburg, Pa., and described in said instrument.

Very respectfully,

WM. H. TAFT,
Secretary of War.

The SECRETARY OF THE TREASURY.

[Inclosure.]

Whereas, by an act of Congress approved March 3, 1903, entitled "An act making appropriations for sundry civil expenses of the Government for the fiscal year ending June 30, 1904, and for other purposes," it is provided, inter alia:

"That the Secretary of War be, and he is hereby authorized, in his discretion, upon the application of the Secretary of the Treasury, to transfer to the custody and control of the Treasury Department, as a marine-hospital site, so much of the United States arsenal grounds in the city of Pittsburg, Pennsylvania, as may be required for that purpose, not exceeding five acres in extent, fronting on Pennsylvania (Penn) avenue, Thirty-ninth, and Fortieth streets."

And whereas the Secretary of the Treasury has applied for the transfer to the custody and control of the Treasury Department, for a marine-hospital site, of the following described parcel of land, viz:

All that part of the United States arsenal grounds situated in the city of Pittsburg, Pa., bounded as follows:

Beginning at the point where the northerly side of Penn avenue meets the westerly side of Fortieth street, and running thence northwesterly along the westerly side of Fortieth street 593 feet to a stake; thence southwesterly at right angles to Fortieth street 500 feet to the easterly side of Thirty-ninth street; thence southeasterly along the easterly side of Thirty-ninth street 275 feet to the northerly side of Penn avenue; thence easterly along the northerly side of Penn avenue 592 feet to the place of beginning, containing not to exceed 5 acres, together with any rights the United States may have in the portions of said streets and avenue adjacent to the said parcel.

Now, therefore, this is to certify that under authority of said act of Congress the Secretary of War hereby transfers the said parcel of land as described above to the custody and control of the Treasury Department for a marine-hospital site, as specified in said act of Congress.

Witness my hand this 7th day of May, 1904.

[SEAL.]

WM. H. TAFT,
Secretary of War.

Savannah, Ga.—Completion of plans and letting of contract.—The building plans for this hospital have been completed in the office of the Supervising Architect of the Treasury Department, and the building contract was awarded June 3, 1904, in the sum of \$96,170. Under the terms of the contract the building is to be completed by August 1, 1905. Buildings for officers' quarters, laundry, and stable are not included. An additional appropriation will be necessary for the erection of these buildings.

REPAIRS AND IMPROVEMENTS MADE TO BUILDINGS AND GROUNDS,
INCLUDING WORK UNDER CONTRACT AND REPAIRS TO HEATING
APPARATUS OF MARINE HOSPITALS.

Marine Hospital at Baltimore, Md. (erected 1887).—Asst. Surg. C. W. Wille, in temporary command, reports the following repairs and improvements:

The addition to executive building for space for an operating room was completed November 4, 1903. Ceilings of two rooms in surgeon's quarters were replastered and repairs made to plastering in other buildings at a cost of \$82. A large portion of the wood floors of the galleries of the three ward buildings was renewed and various repairs made to buildings at a cost of \$577.86 for materials. The kitchen range was repaired at a cost of \$27.25. Minor repairs were made to heating apparatus at a cost of \$172.50.

Hospital at Boston, Mass. (erected 1860).—Surg. R. M. Woodward, in command, reports the following repairs and improvements:

Repairs to roof, cupola, and dormers of main building and 8 new doors in out-buildings, \$1,087; painting exterior iron and wood work of main building, \$1,049; repairs to plastering in assistant surgeon's quarters, \$16; repairs to chimney and down spouts, main building, and replacing spire on laundry building, \$110; wire fence and gates inclosing reservation, \$2,095, and minor repairs to buildings made at a cost of \$701.74 for materials.

Hospital at Cairo, Ill. (erected 1885).—Surg. G. M. Guiteras, in command, reports the following repairs and improvements:

New lockers for patients' clothing, \$120; galvanized iron gutters for all buildings except upper portion of surgeon's quarters, \$441; window and door screens to wards and repairs to screens of the other buildings, \$435; new kitchen range and steam table, \$383; window awnings for executive building and surgeon's quarters, \$223; chimney tops of all buildings rebuilt, \$106; wood fence on Tenth street repaired, \$171.65; repairs to porch roof of surgeon's quarters, \$109.75; lowering window sills of first story, surgeon's quarters, \$479; repairs to plumbing, \$85; and various minor repairs and repair material, lumber, paints, etc., at a cost of \$558.23.

Hospital at Chicago, Ill. (erected 1873).—Surg. Charles E. Banks, in command, reports the following repairs and improvements:

Painting metal roof, \$310; repairs to front steps of hospital, \$325; interior telephone system installed, \$347; laundry tubs, surgeon's and assistant surgeon's quarters, \$103; thirty shade trees planted, \$115; two windows installed in basement stairway, \$60; repointing mortar joints of brick walls of power house, \$771; repair of tile roof of power house, \$55; repair of plaster in power house and cement ceiling second story porch of hospital building, \$220.

A new dumb waiter from hospital kitchen in basement to third story was installed and repairs made to old freight elevator, by the Supervising Architect, at a cost of \$1,160. From the balance of the appropriations for the building, minor repairs to heating apparatus were made at a cost of \$117.63 for material.

Hospital at Cincinnati, Ohio (erected 1884).—Surg. G. M. Ma-gruder, in command, reports the following repairs and improvements:

New coal bin, stall floors, door to pharmacist's quarters, repairs to gutters and lumber for minor repairs, \$541.46; painting material for exterior of wards, executive building, surgeon's, quarters, stable, and outpatient building, \$166.87; two lavatories installed, \$110; repairs to laundry machinery, water heater, plumbing, and miscellaneous minor repairs, \$243.48; repairs to heating apparatus, \$34.92.

Hospital at Cleveland, Ohio (erected 1852).—Passed Asst. Surg. H. S. Mathewson, in command, reports the following repairs and improvements:

Porcelain sinks in surgical dressing room, laboratory, and bathrooms, \$365; repairs to main stairway, \$85; electric bell and call system installed, \$148; crushed stone for driveways, \$83.25; and miscellaneous minor repairs, \$191.33; repairs to and supplies for heating apparatus, \$308.56.

Hospital at Detroit, Mich. (erected 1857).—Surg. H. W. Austin, in command, reports the following repairs and improvements:

Repairs to plumbing, \$505.25; painting and repairs to hospital building, \$1,727.75; miscellaneous repairs, \$77.32; repairs to heating apparatus, \$2,305.75.

Hospital at Evansville, Ind. (erected 1891).—Passed Asst. Surg. B. W. Brown, in command, reports the following repairs and improvements:

The painting of all the buildings, inside and outside, has been completed, \$322.20 having been expended for material during the year. Cement floors for two rooms and hall in basement of executive building and for one room in basement of surgeon's quarters, \$160; roadways and walks repaired, \$118; new water heaters for executive building and north ward, \$110.15; new washing machine for laundry, \$402; miscellaneous repair material, \$282.70; repairs to heating apparatus, \$360.96.

Marine-Hospital Sanatorium, Fort Stanton, N. Mex. (established 1900).—Surg. P. M. Carrington, in command, reports the following repairs and improvements:

The general repairs and improvements to buildings Nos. 1, 2, 3, 9, 13, and 14 and the corrals and the installation of an electric-lighting system have been completed. Electric motor for pumping plant installed, \$1,257.27; 3 sputum crematories, \$336.22; 2 road scrapers purchased, \$75; lumber, painting material, glass, plumbing material, hardware, and electrical supplies and miscellaneous repairs, \$2,649.08; repairs to boilers, heating stoves, new stoves, and heaters, \$443.17. Proposal has been accepted for boring a well 500 feet deep, including casing, pump barrel, and rod; estimated cost, \$3,081, and the work is now in progress.

Hospital at Key West, Fla. (erected 1840).—Passed Asst. Surg. C. H. Gardner, in command, reports the following repairs and improvements:

Painting roof and exterior woodwork of main building and three outbuildings, \$399.55; plumbing fixtures for pharmacist's quarters, \$218.55; new range for hospital kitchen, \$148; window and door screens, \$126.80; new plumbing for surgeon's quarters, \$128; lumber and hardware, shop and fuel house, \$140.66; paints, oils, etc., \$109.65, and miscellaneous minor repairs, \$569.70.

Hospital at Louisville, Ky. (erected 1852).—Passed Asst. Surg. G. B. Young, in command, reports the following repairs and improvements:

New macadam roadway at Portland avenue entrance, \$125; new down spouting for hospital building, \$51, and new cornice gutters, \$134; door to stable, \$75; disinfecting chamber installed, \$233; 81 trees planted, \$49.75; repairs to cupola, \$36; gas fitting and repairs, \$49.95; piping and hydrants for hose, \$25.50; painting material, lumber, glass, pipe and fittings, and miscellaneous repair material, \$675.52. Contract has been made for renovation of the plumbing and toilet rooms for patients and attendants, \$5,114; the work to be completed November 18, 1904.

Hospital at Memphis, Tenn. (erected 1885).—Surg. Eugene Wasdin, in command, reports the following repairs and improvements:

Second story to porch, front of executive building, \$267; repairs to plastering, \$88; extension of gas-lighting system to entrance gates, \$31.12; repair material and tools for minor repairs to buildings, heating apparatus, plumbing, and stoves, \$204.07.

Hospital at Mobile, Ala. (erected 1843).—Surg. J. H. White, in command, reports the following repairs and improvements:

Repairs to hospital roof, \$28.60; new window screens, \$55.95; repairs to porches at ends of building, \$135; ventilating pipe from hospital kitchen, \$48; repairs to plaster ceilings and new cement wainscot in halls, \$196; painting material for outbuildings, \$306.90; repairs to plumbing, \$16.75, and whitewashing main building, \$9.

Hospital at New Orleans, La. (erected 1885).—Surg. C. P. Wertenbaker, in command, reports the following repairs and improvements:

Repairs to assistant surgeon's quarters (old plantation building), \$1,083.07; new sewer pump, \$361.50; protecting water intake pipe in river, \$312.55; repairs to en-

gines and pumps, \$160.15; to electric light plant, \$168.86; to sewer outlet, \$132.60; painting material, lumber, and minor repairs, \$896.63; repairs to heating apparatus, tools, new stoves, and radiators, \$500.03.

Hospital at New York, N. Y. (erected 185-).—Surg. P. H. Bailhache, in command, reports the following repairs and improvements:

Shoring and bracing floors of the old building known as the white house, \$110; repairs to roof, gutters, and spouts, \$41; repairs to laundry building, \$29.85; repairs to roofs, gutters, and spouts of main building, \$85.40; repair material for miscellaneous repairs to buildings and plumbing, \$796.28; repairs to heating apparatus, stoves, etc., \$384.68.

Marine-Hospital office and out-patient building, Philadelphia, Pa. (erected 1877; extension, 1901).—Surg. Fairfax Irwin, in command, reports that repairs were made to a window, at a cost of \$13.75.

Hospital at Portland, Me. (erected 1859).—Surg. W. P. McIntosh, in command, reports the following repairs and improvements:

New washing machine for laundry, \$482.50; repairs to electric-lighting plant, \$171.03; painting material, lumber and hardware, and minor repairs, \$566.83; material and repairs to heating apparatus, \$78.34.

Hospital at Port Townsend, Wash. (erected 1895).—Passed Asst. Surg. M. H. Foster, in command, reports the following repairs and improvements:

Galvanized-iron ventilating ducts installed in attics, \$537.50; concrete floors in areas around building, \$275, and material for miscellaneous minor repairs, \$313.74; repairs to heating apparatus, \$2.30.

Hospital at San Francisco, Cal. (erected 1875).—Passed Asst. Surg. W. G. Stimpson, in command, reports the following repairs and improvements:

Macadam road to fuel-oil tank, \$340; drain at back of wards A, B, and C, \$285; material for and miscellaneous minor repairs, \$473.14.

Hospital at St. Louis, Mo. (erected 1885).—Surg. James M. Gasaway, in command, reports the following repairs and improvements:

New floor for front porch of executive building and remodeling entrance doors, \$117.50; new mangle for laundry, \$335; repairs to water heaters in center and south wards and in executive building, \$261; miscellaneous repairs to plumbing and fountain basin, \$98.05; painting material, \$217.55; lumber and hardware, \$619.89; for miscellaneous minor repairs to buildings, \$146.23; repairs to heating apparatus, \$112.63.

Hospital at Vineyard Haven, Mass. (erected 1895).—Surg. D. A. Carmichael, in command, reports the following repairs and improvements:

Miscellaneous repairs to buildings, \$178.69; repairs to heating apparatus, \$48.

Hospital at Wilmington, N. C. (erected 1859).—Surg. John Godfrey, in command, reports the following repairs and improvements:

Terra-cotta pipe in old drainage ditches and earth filling of ditches, \$571.25; painting roofs of buildings, \$141.29; painting material, \$326.05; and miscellaneous repairs and material, \$103.82.

Hospital at Cape Nome, Alaska.—Acting Asst. Surg. A. L. Derbyshire in charge.

The old hospital building and second story of telegraph building upon the Government reservation were assigned to the Public Health and Marine-Hospital Service, and necessary repairs to the buildings to adapt them for use were made, at a cost of \$2,500.

Hygienic Laboratory, Washington, D. C. (erected 1903).—Passed Asst. Surg. M. J. Rosenau, director, reports the following:

The building was formally occupied by the Laboratory on March 16, 1904. The painting of the interior of the building was completed, gas and electric fixtures, special plumbing fixtures, tables, partitions, instrument and book cases, refrigerating plant, library and office furniture, fire-alarm system and extinguishing apparatus, rubber matting and stair treads installed, the disinfecting shed, animal house, and incinerator moved and reconstructed, all at a cost of \$13,114.65.

Respectfully submitted.

L. L. WILLIAMS,
Assistant Surgeon-General.

The SURGEON-GENERAL.

[NOTE.—The statistical tables which form a part of the report of the division of marine hospitals and relief will be found at the end of this volume.]

DIVISION OF SANITARY REPORTS AND
STATISTICS.

REPORT OF DIVISION OF SANITARY REPORTS AND STATISTICS.

By GEORGE T. VAUGHAN,

Assistant Surgeon-General, Public Health and Marine-Hospital Service, in charge.

SIR: I have the honor to submit the following report of transactions of the division of sanitary reports and statistics for the fiscal year ended June 30, 1904:

CHOLERA.

There has been a great diminution in the prevalence of this disease as compared with the past fiscal year, when it was reported present in twelve countries with, in round numbers, 165,000 deaths. During the year just ended it was reported present in only seven countries—all in the Eastern Hemisphere—with, in round numbers, 26,000 deaths, as follows:

AFGHANISTAN.

In December, 1903, cholera was reported present in Herat; no particulars.

CHINA.

During the year less than 800 deaths were reported from China—chiefly from Amoy and Shanghai—as compared with 55,000 deaths for the year before. Other cities affected were Hankau, Hongkong, Shanghai, and Tientsin. One case of cholera occurred at Shanghai in October, 1903, on the steamship *Olivebank*. Three cases and 1 death occurred at Tientsin. The disease was said to have been imported by the steamship *Shenking*.

INDIA.

The decrease of cholera in India continues, only 1,089 deaths having been reported for the year just ended, compared with 2,355 deaths for the year before.

JAPAN.

From August 11, 1903, to November 30, 1903, 94 deaths were reported from Japan from two places, viz, Kobe and Nagasaki, as compared with 4,750 deaths from 19 places during the previous year.

PHILIPPINE ISLANDS.

From May 2, 1903, to May 2, 1904, there were reported from Manila and the provinces 21,214 deaths from cholera, a small number compared with the report of the preceding year, which gave 66,771 deaths.

STRAITS SETTLEMENTS.

From May 16 to December 19, 1903, 310 deaths from cholera were reported from Singapore—showing here also a decided falling off—895 deaths having been reported for the preceding year.

REPORT OF DIVISION OF SANITARY REPORTS AND STATISTICS

By GEORGE T. COOPER.

Assistant Surgeon-General, Public Health and Marine-Hygiene Service, U.S.A.

SIR: I have the honor to submit the following report of transactions of the division of sanitary reports and statistics for the year ended June 30, 1904:

CHOLERA.

There has been a great diminution in the prevalence of the disease as compared with the past fiscal year, when it was reported present in twelve countries with, in round numbers, 350,000 deaths. During the year just ended it was reported present in only seven countries—the Eastern Hemisphere—with, in round numbers, 25,000 deaths as follows:

AFRICA—EGYPT.

In December, 1903, cholera was reported present in Egypt in particulars.

CHINA.

During the year less than 800 deaths were reported here, chiefly from Amoy and Shanghai—as compared with 27,000 in the year before. Other cities affected were Hankow, Peking, Shanghai, and Tientsin. One case of cholera occurred at Shanghai, October, 1903, on the steamship *Chinabank*. Three cases of cholera occurred at Tientsin. The disease was said to have been introduced on the steamship *Shenking*.

INDIA.

The decrease of cholera in India continues, only 1,200 deaths being reported for the year just ended, compared with 22,000 in the year before.

JAPAN.

From August 11, 1903, to November 30, 1903, 84 deaths were reported from Japan from two places, viz, Kobe and Nagasaki, compared with 4,750 deaths from 19 places during the past year.

PHILIPPINE ISLANDS.

From May 2, 1903, to May 21, 1904, 21 deaths were reported from the provinces compared with the report for the year before.

From May 2, 1903, to May 21, 1904, 21 deaths were reported from the provinces compared with the report for the year before.

TURKEY.

Cholera has continued to prevail to a considerable extent in Turkey. In Syria, from August 8 to November 2, 1903, there were reported 1,542 deaths. The disease occurred in other vilayets, as follows: Bagdad, Bassorah, and Diarbekir. Most of the cases occurred between August 1 and December 31, 1903.

Below is given a table of cholera in two sections (1) from June 27 to December 25, 1903, and (2) from December 26, 1903, to June 24, 1904:

Cholera as reported to the Surgeon General, Public Health and Marine-Hospital Service.

JUNE 27, 1903, TO DECEMBER 25, 1903.

[Reports received by the Surgeon-General, Public Health and Marine-Hospital Service, from United States consuls through the Department of State and from other sources.]

Place.	Date.	Cases.	Deaths.	Remarks.
China:				
Amoy	July 19-Aug. 1		650	
Hankow	Sept. 5-Sept. 19	4	2	
Hongkong	June 6-Oct. 31	9	4	
Shanghai	Aug. 1-Oct. 10		90	2 cases from a vessel; 1 case on Br. ss. Olivebank.
Tientsin	Sept. 5-Sept. 19	3	1	Imported via ss. Shenking.
India:				
Bombay	May 20-Aug. 22		19	
Calcutta	May 22-Nov. 14		320	
Chefoo	Sept. 5-Sept. 12	1	1	
Karachi	June 1-June 7	1		
Madras	June 6-Oct. 9		21	
Japan:				
Kobe	Sept. 27-Oct. 3	2	1	
Nagasaki	Aug. 11-Nov. 20	169	92	
Philippine Islands:				
Manila	May 2-Oct. 24	761	670	
Provinces	do	25,629	19,142	
Straits Settlements:				
Singapore	May 16-Nov. 7		298	
Turkey:				
Arghani-Maaden	Oct. 6	2		5 deaths daily.
Diarbekir	Oct. 8			
Gergen	Oct. 6	4		
Severek	Oct. 8			Present.
Syria	Aug. 8-Nov. 2	5,760	1,542	

DECEMBER 26, 1903, TO JUNE 24, 1904.

Afghanistan:				
Herat	Dec. 12			Present.
China:				
Shanghai	Dec. 18	1		On Br. ss. Olivebank.
India:				
Bombay	Dec. 9-Mar. 26		8	
Calcutta	Nov. 15-May 21		660	
Karachi	Feb. 22-Mar. 27	3	2	
Madras	Nov. 14-May 6		59	
Japan:				
Nagasaki	Nov. 21-30		1	
Philippine Islands:				
Manila	Oct. 31-May 2	52	48	1 death on ss. Coptic.
Provinces	Oct. 31-Mar. 12	1,677	1,354	
Straits Settlements:				
Singapore	Nov. 8-Dec. 19		12	
Turkey:				
Bagdad—				
Bagdad	Mar. 8-Apr. 6	36	28	
Hitt	Dec. 13-15	8	4	
Kerbela	Dec. 12-Jan. 12		463	
Mosul	Dec. 21-Jan. 4	1	1	
Musseleb	Dec. 17-Jan. 4	48	35	
Bassorah—				
Basra	Feb. 6-Apr. 10	150	131	

YELLOW FEVER.

UNITED STATES.

During the year just ended nearly all the cases of yellow fever occurred near the Mexican border. In Laredo from September 24, 1903, to March 18, 1904, there were reported 1,014 cases with 107 deaths; in Minera, up to November 28, 1903, 137 cases with 11 deaths; in San Antonio from October 21 to November 28, 1903, 43 cases and 16 deaths. Other places in Texas at which yellow fever was reported present were Cannel, Castroville, Hondo, and Dewitt County. One fatal case was imported to Angel Island Quarantine in September on the steamship *Colon* from Panama via Acapulco.

Cases were brought to Gulf Quarantine as follows: In July 1 fatal case on steamship *Mount Vernon* from Limon; in September 1 fatal case on schooner *Henrietta J. Powell* from Veracruz, and in November 2 cases on steamship *Celaeno* from Tampico.

Yellow fever in the United States, as reported to the Surgeon-General, Public Health and Marine-Hospital Service.

JULY 3, 1903, TO DECEMBER 25, 1903.

Place.	Date.	Cases.	Deaths.	Remarks.
California.				
Angel Island.....	Sept. 10-Sept. 11....	1	1	Case on ss. <i>Colon</i> , from Panama; port of call, Acapulco.
Mississippi:				
Gulf Quarantine, Ship Island....	July 3-July 5.....	1	1	Case on ss. <i>Mount Vernon</i> , from Limon; discovered at Mobile. Vessel remanded to Gulf Quarantine, Ship Island.
	Sept. 1.....	1	1	Case on schooner <i>Henrietta J. Powell</i> , from Vera Cruz.
	Nov. 21.....	2		On Dutch ss. <i>Celaeno</i> , from Tampico, Mexico.
Texas:				
Cannel.....	To Nov. 25.....	28	1	Mining camp.
Castroville.....	Oct. 21.....	1		
Hondo.....	Oct. 19.....	1		
Laredo.....	Sept. 24-Dec. 21....	1,008	107	
Minera.....	To Nov. 28.....	137	11	Mining camp near Laredo.
San Antonio.....	Oct. 21-Nov. 28....	43	16	1 case at Fort Sam Houston.
Dewitt County.....	Oct. 26-Nov. 4.....	5	1	

DECEMBER 26, 1903, TO JUNE 24, 1904.

Texas:				
Laredo.....	Dec. 26-Mar. 18....	6		1 case imported from Minera.

FOREIGN AND INSULAR.

During the same period, as was said last year, no case was reported from Cuba as having originated there. From July 7 to November 14, 1903, 7 cases and 2 deaths occurred at Habana; February 6 to 13, 1904, 6 deaths in the vicinity of Niquero; and April 9, 1904, 1 case at Sagua—all having been imported on vessels coming from Mexico or South America.

Yellow fever was reported in the following countries: Africa—On the Ivory Coast, Grand Bassam. Brazil—Pernambuco and Rio de Janeiro. Colombia—Barranquilla, Cartagena, and Panama. Costa Rica—Alajuela, Limon, Matina, San Jose, and Zent. Ecuador—Guayaquil. Jamaica—Kingston and Port Royal. Mexico—At 31 places. Venezuela—Seven places. It occurred in nine countries in all, 4,300 cases with 1,519 deaths, as compared with 1,537 deaths last year, the degree of prevalence appearing to be the same. It will not do to estimate mortality on these figures, as in many instances only deaths are reported and the number of cases remains unknown.

For the year just ended by far the greatest number of cases and deaths from yellow fever were reported from Mexico, viz, 3,087 cases with 1,303 deaths.

See table on yellow fever, in two sections.

Yellow fever as reported to the Surgeon-General, Public Health and Marine-Hospital Service.

JUNE 27, 1903, TO DECEMBER 25, 1903.

[Reports received by the Surgeon-General, Public Health and Marine-Hospital Service, from United States consuls through the Department of State and from other sources.]

Place.	Date.	Cases.	Deaths.	Remarks.
Brazil:				
Pernambuco	June 16-June 30		1	
Rio de Janeiro	May 17-Nov. 15		32	
Colombia:				
Panama	June 8-Sept. 28	43	15	
Costa Rica:				
Limon	June 11-Oct. 29	49	29	One case on ss. Westgate.
Matina	Aug. 20	2		
San Jose	do	2		Imported.
Zent	do		4	
Cuba:				
Habana	July 7-Nov. 14	7	2	One from Ward Line ss. Vigilancia, from Progreso; 1 from Sp. ss. Alfonso XIII; 1 on Am. ss. Monterey, from Progreso; 2 on Ger. ss. Prinz Adalbert, from Veracruz and Tampico, and 2 cases and 1 death from ss. Paloma, from Guanta, Venezuela.
Ecuador:				
Guayaquil	May 2-Nov. 28		9	
Jamaica:				
Port Royal	Oct. 11-Nov. 21	5	1	Sporadic.
Mexico:				
Altamira	July 18			Present.
Cardenas	July 10	1	1	
Citas	Aug. 23-Oct. 24	148	56	
Ciudad Victoria	Oct. 4-Dec. 5		60	
Coatzacoalcas	July 19-Dec. 5	6	3	Three cases imported.
Doña Cecilia	July 11-Nov. 4	2		
El Higo	Aug. 15			Present.
Linares	To Dec. 5	2,011	366	
Merida	Jan. 1-Dec. 5	214	85	
Mexico	Aug. 10-Oct. 4		3	
Monclova	Nov. 17-Nov. 25	6	4	
Monterey	Nov. 7	500		
Motul	Sept. 6-Sept. 26	1		
Motzorongo	July 20			Do.
Nuevo Laredo	Sept. 15-Nov. 28	66	29	
Orizaba	May 17-July 6	12		Eleven cases imported from Veracruz.
Progreso	Jan. 1-Nov. 7	19	5	
Quintana Roo	Sept. 26	1	1	
Reata	Nov. 26	1		
Salina Cruz	Aug. 9-Nov. 28	23	11	
San Luis Potosi	July 31			Present.
Tampico	June 13-Nov. 28		305	One on American schooner Alverda S. Elzey.
Tamuin	Aug. 15			Present.
Tehuantepec	Aug. 9-Nov. 28		16	

Yellow fever as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Mexico—Continued.				
Teran	Aug. 27			Present.
Tierra Blanca	July 20			Do.
Valladolid	Aug. 9-Sept. 26	2		
Veracruz	June 13-Dec. 12	955	319	One from Br. ss. Trader, probably infected on shore. One on Br. ss. Kassala, probably infected on shore.
Victoria	Aug. 10	3	1	
Zongolica	To July 11	5		
Venezuela:				
Barquesimeto	July 31-Oct. 21		2	
Cagua	Sept. 1			Present.
Caracas	Sept. 15			
Maracaibo	July 5-Oct. 24	2	2	
Puerto Cabello	Sept. 20-Sept. 26		1	
Tocuyo	July 31-Oct. 16			Do.

DECEMBER 26, 1903, TO JUNE 24, 1904.

Africa:				
Ivory Coast, Grand Bassam	Dec. 12			Present.
Brazil:				
Rio de Janeiro	Nov. 23-May 1	76	26	
Colombia:				
Barranquilla	Mar. 28-Apr. 17		2	
Cartagena	Nov. 23-Mar. 20		2	
Costa Rica:				
Alajuela	Apr. 19-24	11	6	
Limon	May 28-June 4	3		
Cuba:				
Vicinity of Niquero	Feb. 6-13		6	From the Nor. bk. Eugen from Cardiff and La Gulara, wrecked on south coast of Cuba.
Sagua	Apr. 9	1		From Br. ss. Wildercroft from Veracruz.
Ecuador:				
Guyaquil	Dec. 6-May 25		66	Two cases on a British bk. from Newcastle.
Jamaica:				
Kingston	Dec. 27-Jan. 9	2	2	
Mexico:				
Ciudad Victoria	Dec. 6-19	4	2	
Coatzacoalcas	May 11-May 23	6	1	
Merida	Dec. 6-June 17	36	15	
Progreso	Apr. 23-May 6	2		
Salina Cruz	Apr. 3-June 4	2	2	
Talleres	May 11	1		
Tampico	May 14-28	3		
Tehuantepec	Dec. 6-June 11	30	10	
Veracruz	Dec. 13-June 11	27	8	One case imported from Boca de Rio. One case on ss. Vigilancia from Progreso.
Panama:				
Panama	Jan. 4-June 5	7	2	
Venezuela:				
La Guaira	Jan. 2-9		1	
Maracaibo	Oct. 25-Feb. 14	3	3	

PLAGUE.

This disease is still prevalent in the Eastern Hemisphere, and still slays its hundreds of thousands in India. It also shows evidence of extending its invasion of the Western Hemisphere, having been reported present in Argentina, Bolivia, Brazil, Chile, Mexico, and Peru.

UNITED STATES.

Below two tables are given. No 1 includes the calendar year 1903 with 17 cases and 17 deaths, and No. 2 the six months ended June 30, 1904, with 9 cases and 8 deaths.

Plague in the United States, as reported to the Surgeon-General, Public Health and Marine-Hospital Service.

DECEMBER 27, 1902, TO DECEMBER 26, 1903.

Place.	Number since March, 1900.	Number since March, 1903.	Date.	Cases.	Deaths.	Remarks.
California:						
San Francisco	93	.....	Dec. 11	1	1	
Do	94	1	Mar. 16	1	1	
Do	95	2	June 5	1	1	
Do	96	3	July 15	1	1	
Do	97	4	July 19	1	1	
Do	98	5	July 20	1	1	
Do	99	6	July 29	1	1	
Do	100	7	Aug. 9	1	1	
Do	101	8	Aug. 21	1	1	
Do	102	9	Sept. 13	1	1	
Do	103	10	Oct. 7	1	1	
Do	104	11	Oct. 20	1	1	
Do	105	12	Oct. 23	1	1	
Do	106	13	Oct. 24	1	1	
Do	107	14	Oct. 29	1	1	
Do	108	15	Nov. 4	1	1	
Do	109	16	Nov. 7	1	1	
Do	110	17	Nov. 12	1	1	

DECEMBER 26, 1903, TO JUNE 24, 1904.

Place.	Number since March, 1900.	Number since January 1, 1904.	Re-ported.	Died.	Bacterio- logically con- firmed.	Remarks.
California:						
San Francisco	111	1	Jan. 10	Jan. 10	Jan. 25	
Do	112	2	Jan. 12	Jan. 11	Jan. 27	
Do	113	3	Jan. 13	Jan. 13	Jan. 22	
Do	114	4	Feb. 7	.....	Feb. 17	Recovered.
Do	115	5	Feb. 9	Feb. 8	Feb. 27	
Do	116	6	Feb. 12	Feb. 12	Feb. 24	
Do	117	7	Feb. 15	Feb. 14	....do....	
Do	118	8	Feb. 17	Feb. 19	Mar. 8	
Concord	119	9	Mar. 1	Feb. 29	Mar. 12	

Summary: Calendar year, 1900, 22 cases, 22 deaths; 1901, 30 cases, 25 deaths; 1902, 41 cases, 41 deaths; 1903, 17 cases, 17 deaths.

FOREIGN AND INSULAR.

For the year just ended plague was reported present in 27 countries as compared with 20 countries the previous year. Only 6 cases were reported in Mexico, at Bagio and Sequeros, while in the previous year there was an epidemic at Mazatlan. The disease increased considerably in the Philippine Islands, in Cebu and Manila, but no cases have been reported since May 7, 1904. Plague seems to have increased in China, but the overwhelming majority of cases and deaths occurred in India, where during the period from May, 1903, to May, 1904, nearly 1,000,000 (913,784) deaths were reported from plague. During about the same period of the preceding year there were reported 658,259 deaths.

The countries reporting plague were: Africa—Cape of Good Hope, Natal, and the Transvaal. Arabia—Aden. Argentina—Tucuman. Australia—Queensland, West Australia, and New South Wales. Bolivia—La Paz. Brazil—Seven places. Chile—Six places. China—Twelve places. Egypt—Twenty-three districts and places. For-

mosa—In seven places, quite extensively. Hawaiian Islands—At Hilo and Honolulu. India—Generally over the country. Italy—Licata, 1 fatal case. Japan—A few cases and deaths in Nagasaki, Yokohama, and Shidzuoka Ken. Mauritius. Mexico—A few cases at Bagio and Sequeros. New Caledonia—Eighty-eight cases and 71 deaths. New Zealand—Two cases and 1 death at Auckland. Persia—Twenty deaths at Kermanschah. Peru—At Arequipa, Barranca, Callao, Chosica, Lima, Matacuna, Mollendo, Pacasmayo, Payta, vicinity of San Pedro. Philippine Islands—Cebu and Manila. Russia—Kronstadt, 1 fatal case in laboratory, January, 1904. Straits Settlements—Singapore. Turkey—Smyrna, 2 deaths.

See plague table for the year in two sections below.

Plague as reported to the Surgeon-General, Public Health and Marine-Hospital Service

JUNE 27, 1903, TO DECEMBER 25, 1903.

[Reports received by the Surgeon-General Public Health and Marine-Hospital Service, from United States consuls through the Department of State, and from other sources.]

Place.	Date.	Cases.	Deaths.	Remarks.
Africa:				
Cape of Good Hope (Port Elizabeth, East London, King Williams Town, and Queenstown included).	May 2-Oct. 24....	83	4	
Natal (Durban and Pietermaritzburg included).	Apr. 18-July 25 ..	22	8	
Australia:				
Queensland, Brisbane.....	May 9-Sept. 12....	21	11	
Bundaberg	May 16-June 13..	3	1	
Townsville	Sept. 4	1	1	
Western Australia, Fremantle, Perth.	June 10-Oct. 13..	2	.....
New South Wales, Sydney.	June 13-July 11..	2	.....
Bolivia:				
La Paz	Aug. 13			Present.
Brazil:				
Para	Nov. 1-Nov. 7	2	1	
Pernambuco	Oct. 17-Oct. 31 ..		6	
Rio de Janeiro	May 24-Nov. 15 ..		221	
Sergipe	Sept. 30			Prevailing.
Chile:				
Concepcion, vicinity of....	July 11			Present.
Iquique	May 15-Sept. 30 ..	182	108	
Plasgua	July 11			Do.
Valparaiso	To Aug. 24	9	2	
China:				
Amoy	May 10-Aug. 1		1,740	Estimated.
Canton	May 12			Increasing.
Fuchau	July 15			Becoming epidemic.
Heung Shan	May 12			Do.
Honam	do			Increasing.
Hongkong	Jan. 1-Nov. 13	1,420	587	
Niuchwang	Sept. 1-Oct. 3	465	414	
Sgun Tak	May 12			Increasing.
Yeung Kong	do			Do.
Egypt:				
Alexandria	May 19-Nov. 13 ..	124	79	
Beni Mazar	June 6-June 19 ..	3	.....
Damiette	June 13-Oct. 1	26	17	
Port Said	May 23-Aug. 7	22	10	
Tantah	June 20-July 9	7	3	
District of Embabek	May 30-June 6....	1	1	
District Gallab	do	1	1	
District Magagha	May 23-June 6....	3	2	
District Minieh	do	1	.....
District Samalut	May 23-Nov. 13 ..		4	
District Tukh	May 30-June 27..	25	4	
France:				
Marseille	To Sept. 15	10	5	
Formosa	Jan. 1-Sept. 30 ..	915	750	
Germany:				
Berlin	June 5-June 18 ..	1	.....	Nurse of case previously reported.

Plague as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1908, TO DECEMBER 25, 1908—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Hawaiian Islands:				
Hilo.....	Sept. 15.....	2	2	
Honolulu.....	June 24-Sept. 12..	6	4	
India:				
Bombay Presidency and Sind—				
Northern Division.....	May 2-Oct. 31....	7,765	6,231	
Central Division.....	do.....	42,305	26,771	
Southern Division.....	do.....	54,166	39,791	
Sind.....	do.....	828	614	
Political charges.....	do.....	85,871	25,168	
Madras Presidency.....	do.....		9,509	
Bengal—				
Calcutta.....	do.....		358	
Presidency.....	do.....	143	138	
Burdwan.....	do.....	74	70	
Bhagalpur.....	do.....	20	17	
Patna.....	do.....	1,637	1,311	
Chota Nagpur.....	Sept. 20-Oct. 31..	194	151	
United Provinces—				
Allahabad.....	May 2-Oct. 31....	1,274	1,111	
Benares.....	do.....	735	454	
Fyzabad.....	do.....	458	376	
Gorakhpur.....	do.....		436	
Meerut.....	do.....		502	
Lucknow.....	do.....	517	429	
Agra.....	do.....		118	
Rohilkhand.....	June 6-Oct. 31....	3	3	
Punjab—				
Jullunder.....	May 2-Oct. 31....	19,508	11,966	
Lahore.....	do.....	19,508	13,719	
Rawalpindi.....	do.....	18,681	11,924	
Multan.....	do.....	1,326	678	
Delhi.....	do.....	9,148	6,660	
Burma—				
Rangoon.....	do.....	1		
Central Provinces—				
Nerbudda.....	do.....	2,076	1,758	
Nagpur.....	do.....	2,684	2,649	
Jubbulpore.....	do.....	535	364	
Chhattisgarh.....	Sept. 26-Oct. 31..	1,819	1,645	
Assam.....	May 16-Oct. 31..	36	9	
Coorg.....	June 6-Oct. 31....	64	27	
Mysore State.....	May 2-Oct. 31....	10,004	7,009	
Hyderabad.....	do.....	8,624	7,357	
Berar.....	do.....		1,633	
Rajputana.....	do.....	532	283	
Central India.....	do.....	13,582	11,991	
Kashmir.....	do.....	592	431	
N. W. F. Province.....	May 16-Oct. 31....	2	2	
Grand total.....		254,712	193,663	
Italy, Licata.....	Sept. 14-Sept. 20..	1	1	
Japan:				
Nagasaki.....	May 21-Aug. 18....	3	2	Two cases and 1 death on Russian war vessel <i>Otvazny</i> , from Shanghai.
Shidzuoka Ken.....	July 11.....	1	1	
Yokohama.....	Jan. 1-Nov. 21....	39	31	One case on Japanese ss. <i>Kaga Maru</i> , from Seattle. Ports of call, Hio-go and Hongkong.
Mauritius.....	May 21-Nov. 12....	704	199	
Mexico:				
Baglo.....	Aug. 17.....	3		
Sequeros.....	Aug. 18.....	3		
New Caledonia.....	July 26-Aug. 13....	88	71	
Peru:				
Arequipa.....	Aug. 13.....			Present.
Mollendo.....	do.....			Do.
Pacasmayo.....	do.....			Do.
Philippine Islands:				
Cebu.....	Sept. 1-Sept. 30....	11	8	
Manila.....	Apr. 11-Oct. 24....	128	117	
Turkey:				
Smyrna.....	Sept. 29.....		1	
Straits Settlements:				
Singapore.....	June 14-Aug. 1....		20	

Plague as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

DECEMBER 26, 1903, TO JUNE 24, 1904.

Place.	Date.	Cases.	Deaths.	Remarks.
Arabia:				
Aden	May 15-20	4	2	
Argentina:				
Tucuman	May 7			Present.
Australia:				
Brisbane	Feb. 12-Apr. 30	11	2	
Cairns	Feb. 16-Mar. 22		2	
Sydney	Mar. 10-Apr. 26	5	1	
Brazil:				
Nietheroy	Apr. 15	1	1	
Para	Nov. 1-Feb. 22	29	15	
Pernambuco	Nov. 16-Jan. 15		18	
Pindamonhangaba	Jan. 15			Several cases.
Porte Alegere	Jan. 1-Feb. 28	50		
Rio de Janeiro	Nov. 16-May 1	232	135	
British South Africa:				
Cape Colony (East London, King Williams Town, Port Elizabeth, Uitenhage)	Nov. 15-May 1		19	
Natal (Pietermaritzburg)	Nov. 29-Dec. 5	3	2	
Transvaal (Johannesburg, Pretoria)	Mar. 20-May 5		69	
Chile:				
Antofagasta	To May 2	73	20	
Iquique	Apr. 9			Present.
Santiago	Apr. 10			Do.
Valparaiso	June 8			Do.
China:				
Amoy	June 4			Do.
Canton	May 26			Do.
Fubieu	Apr. 15		50	
Hongkong	Nov. 8-Dec. 12	6	6	
Sunul	Apr. 15		20	
Tientsin	Nov. 29-Dec. 5		1	
Egypt:				
Abu Homos	Apr. 9-16	1		
Alexandria	Nov. 21-May 14	16	7	
Asiout	Mar. 19-26	1		
Bahiana district	Mar. 13-May 14	75	73	
Beni Mazar	Mar. 19-Apr. 28	4	3	
Bibeh district	Mar. 26-May 14	11	3	
Chibin-el-Kom	Apr. 10-May 14	13	3	
Dechneh	Mar. 19-May 14	20	13	
Girgeh district	Mar. 13-May 14	37	34	
Kuesna	Mar. 19-Apr. 2	3	1	
Minieh district	Nov. 21-Feb. 3	7	4	
Nag-Hamadi district	Mar. 13-Apr. 23	44	38	
Port Said	Mar. 18-May 7	3	1	
Samallut district	Mar. 13-May 14	156	86	
Sohag	Mar. 13-26	1		
Suez	Feb. 21-Apr. 2	3	1	One from Br. ss. Knight of the Thistle, from Bombay, and 1 from Br. transport Plaisy, from Bombay.
Tahtah district	Mar. 13-May 14	34	28	
Zagazig	Apr. 22-May 7	1	1	
Formosa	To Dec. 15, 1903	869	702	
Jan. 1-Mar. 6		225	145	
Enaulko	Mar. 1-May 14	781	440	
Hozan	Apr. 17-May 14		3	
Kagi	Mar. 1-May 14	1,043	678	
Kelung	Mar. 1-Apr. 30	4	3	
Taihoku	Mar. 1-May 14	28	24	
Tainan	do	976	772	
Toroku	Mar. 31-May 14	11	3	
Hawaii:				
Hilo	Mar. 4		5	
Honolulu	Jan. 10-June 10	4	3	
India:				
Bombay Presidency and Sind	Nov. 15-May 7	240,123	162,993	
Madras Presidency	do	16,301	12,673	
Bengal	do	66,116	59,456	
United Provinces	do	129,374	120,543	
Punjab	do	307,312	244,111	
Central Provinces (including Berar)	do	52,831	44,214	
Burma	Feb. 14-May 7	1	1	Imported.
Coorg	Nov. 15-May 7	18	10	
Mysore State	do	14,918	11,374	

Plague as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

DECEMBER 26, 1903, TO JUNE 24, 1904—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
India—Continued.				
Hyderabad State	Nov. 15-May 7	22,962	18,946	Six cases imported.
Central India	do	29,232	26,123	
Rajputana	do	13,549	11,670	
Kashmir	do	10,517	7,823	
N. W. F. Provinces	Nov. 21-May 7	52	48	
Baluchistan	Nov. 29-May 7	29	18	
Grand total		903,325	720,003	
Japan:				
Yokohama	Nov. 22-Dec. 5	2	2	
Mauritius	Nov. 13-Apr. 7	535	317	
New Zealand:				
Auckland	Apr. 29	2	1	
Peru:				
Baranco	Apr. 14		5	One case on ss. Limari Apr. 21.
Callao	Feb. 24-Apr. 24	6	3	
Chosica	Apr. 14		2	
Lima	Mar. 25-May 14	150	60	
Matacuna	Apr. 14	2		
Payta	May 30			Present.
San Pedro vicinity	Feb. 20-26	10	7	
Persia:				
Kermanschah	Mar. 31-Apr. 11		20	
Philippine Islands:				
Cebu	Jan. 1-Mar. 31	5	5	
Manila	Nov. 15-May 7	47	38	
Russia:				
Kronstadt	Jan. 14-20		1	At plague laboratory.
Straits Settlements:				
Singapore	Feb. 28-Apr. 2		3	
Turkey:				
Smyrna	Dec. 1-6		1	

SMALLPOX.

UNITED STATES.

During the six months ended December 31, 1903, smallpox was reported from 35 States with a total of 13,739 cases and 606 deaths. During the six months ended June 30, 1904, smallpox was reported from 37 States and Territories with a total of 11,367 cases and 512 deaths. Total for the year, 25,106 cases and 1,118 deaths. This is a great decrease since last year, and partly fulfills the statement made in my last report that the disease had reached the high-water mark in 1902, and would continue to decrease from that time until it practically disappears.

A short table follows, which shows the steady increase of the disease to the maximum point and then the decrease during the last two years.

During the six years from July 1, 1898, to June 30, 1904, there were reported 189,389 cases of smallpox with 6,745 deaths, a mortality of 3.56.

Year.	Cases.	Deaths.
July 1, 1898-June 30, 1899	12,277	709
July 1, 1899-June 30, 1900	15,053	735
July 1, 1900-June 30, 1901	38,506	689
July 1, 1901-June 30, 1902	55,857	1,852
July 1, 1902-June 30, 1903	42,590	1,642
July 1, 1903-June 30, 1904	25,106	1,118
Total	189,389	6,745

Below is given the table in two sections for the fiscal year ended June 30, 1904, showing the occurrence of the disease by States, counties, etc.:

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service.

JUNE 27, 1903, TO DECEMBER 25, 1903.

Place.	Date.	Cases.	Deaths.	Remarks.
Alabama:				
Mobile	June 20-Nov. 27..	67	.....
Total for State		67	.....
California:				
Fresno	June 1-June 30 ..	7	.....
Los Angeles	July 12-Nov. 21 ..	38	.....
Oakland	Aug. 1-Oct. 31 ..	10	.....
Sacramento	Aug. 2-Aug. 23 ..	3	.....
San Francisco	June 14-Dec. 6 ..	30	.....
Total for State		88	.....
Colorado:				
Adams County	Apr. 1-May 31 ..	14	.....
Archuleta County	do	1	.....
Boulder County	Apr. 1-Nov. 30 ..	88	.....
Chaffee County	Apr. 1-Sept. 30 ..	33	.....
Cheyenne County	June 1-June 30 ..	3	.....
Clear Creek County	Apr. 1-June 30 ..	12	.....
Delta County	June 1-July 31 ..	2	.....
Denver County (Denver included)	Apr. 1-Nov. 30 ..	284	.....
El Paso County	do	20	.....
Fremont County	Apr. 1-Sept. 30 ..	41	.....
Garfield County	Apr. 1-July 31 ..	2	.....
Gilpin County	do	15	.....
Jefferson County	Apr. 1-Sept. 30 ..	57	.....
Kit Carson County	Apr. 1-Nov. 30 ..	21	.....
Lake County	June 1-Nov. 30 ..	21	.....
Larimer County	Apr. 1-Aug. 31 ..	35	.....
Las Animas County	Apr. 1-May 31 ..	2	.....
Lincoln County	Apr. 1-Oct. 30 ..	8	.....
Logan County	Apr. 1-May 31 ..	1	.....
Mesa County	July 1-Nov. 30 ..	13	.....
Morgan County	Apr. 1-May 31 ..	1	.....
Otero County	do	14	.....
Ouray County	July 1-July 31 ..	2	.....
Park County	June 1-June 30 ..	1	.....
Pueblo County	Apr. 1-July 31 ..	10	.....
Rio Grande County	Nov. 1-Nov. 30 ..	39	.....
Routt County	Apr. 1-June 30 ..	82	.....
San Miguel County	July 1-Aug. 31 ..	18	.....
Summit County	Apr. 1-July 31 ..	3	.....
Teller County	Apr. 1-Aug. 31 ..	12	.....
Washington County	Apr. 1-July 31 ..	20	.....
Weld County	Apr. 1-Nov. 30 ..	115	.....
Yuma County	Apr. 1-July 31 ..	25	.....
Total for State		1,015	.....
Florida:				
Alachua County, Gainesville	June 13-Oct. 31 ..	1	.....
Baker County, Sanderson	do	2	.....
Duval County, Jacksonville	do	6	.....
Escambia County, Pensacola	do	15	.....
Holmes County, Ponce de Leon	do	12	.....
Leon County, Tallahassee and Crestview	do	19	.....
Levy County, Ottercreek	do	3	.....
Polk County, Kathleen	do	1	.....
De Soto County, Punta Gorda	do	3	.....
Total for State		62	.....
Georgia:				
Atlanta	June 25-July 8 ..	3	.....
Total for State		3	.....

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Illinois:				
Bond County (Sorento).....	Nov. 1-Nov. 30	2		
Calhoun County (Bellevue).....	do	5		
Christian County (Millersville, Assumption).....	do	11		
Clark County (Casey Township, Moriah, Westfield).....	do	50	2	
Coles County (Charleston).....	do	6	1	
Cook County (Chicago, Lemont, Orland).....	June 28-Dec. 11	287	10	
Cumberland County (Hazel Dell).....	Nov. 1-Nov. 30	2		
Gallatin County (Ridgeway).....	do	10		
Grundy County (South Wilmington).....	do	10	1	
Lawrence County (Russellville, Russel Township, Allison Township).....	do	25	1	
Logan County (Atlanta).....	do	1		
La Salle County (Streator).....	do	16	2	
Macon County (Argenta).....	do	3		
Marion County (Haines Township, Harris Township).....	do	10	1	
McLean County (Bloomington, Heyworth, Shirley).....	do	35	2	
Randolph County (Coulterville).....	do	6	1	
St. Clair County (Belleville, Freeburg, Lenzburg, Millstadt, New Athens).....	June 13-Dec. 12	117	15	
Vermillion County (Danville, Rankin).....	July 11-Nov. 30	10	1	
Washington County (Plum Hill Township).....	Nov. 1-Nov. 30	5		
Whiteside County (Sterling).....	do	3		
Will County (Lockport, Joliet, Du Page Township).....	do	25	2	
Williamson County (Granville, Marion).....	do	12	1	
Total for State		651	40	
Indiana:				
Adams County.....	June 1-June 30	1		
Allen County.....	June 1-Nov. 30	17		
Benton County.....	May 1-Nov. 30	21		
Blackford County.....	June 1-June 30	1		
Boone County.....	May 1-Oct. 31	8	1	
Brown County.....	May 1-June 30	18		
Carroll County.....	May 1-Nov. 30	8		
Cass County.....	May 1-June 30	44		
Clark County.....	do	9		
Clay County.....	May 1-Nov. 30	111		
Clinton County.....	Oct. 1-Nov. 30	2		
Crawford County.....	May 1-Nov. 30	14	2	
Davless County.....	do	59	2	
Dearborn County.....	June 1-June 30	1		
Decatur County.....	May 1-June 30	21		
Dekalb County.....	May 1-Nov. 30	8		
Delaware County.....	May 1-June 30	28		
Dubois County.....	Oct. 1-Nov. 30	31		
Fayette County.....	June 1-June 30	2		
Floyd County.....	May 1-Oct. 31	8		
Fountain County.....	May 1-Nov. 30	18		
Fulton County.....	do	17		
Gibson County.....	May 1-Oct. 31	12		
Grant County.....	May 1-Nov. 30	46		
Greene County.....	May 1-May 31	7	1	
Hamilton County.....	Oct. 1-Oct. 31	1		
Hancock County.....	Nov. 1-Nov. 30	1		
Harrison County.....	June 1-June 30	5		
Hendricks County.....	May 1-June 30	11		
Howard County (Kokomo included).....	May 1-Nov. 30	22		
Huntington County.....	May 1-May 31	1		
Jackson County.....	do	1		
Jasper County.....	do	30	1	
Jennings County.....	May 1-Nov. 30	6		
Johnson County.....	May 1-May 31	5		
Knox County.....	May 1-June 30	13		
Lake County.....	June 1-Nov. 30	12		

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Indiana—Continued.				
Laporte County.....	May 1-Oct. 31....	33		
Lawrence County.....	May 1-June 30....	19		
Madison County (Elwood included).	May 1-Oct. 31....	49		
Marion County (Indianapolis included).	.....do.....	33	4	
Marshall County.....	Oct. 1-Nov. 30....	29		
Martin County.....	May 1-Nov. 30....	27		
Miami County.....	May 1-June 30....	14		
Monroe County.....	May 1-Nov. 30....	30		
Montgomery County.....	.....do.....	3		
Morgan County.....	.....do.....	7		
Newton County.....	May 1-May 31....	3		
Noble County.....	May 1-June 30....	2		
Orange County.....	May 1-Nov. 30....	85		
Owen County.....	May 1-May 31....	4		
Parke County.....	May 1-Nov. 30....	22	1	
Perry County.....	May 1-Oct. 31....	3		
Pike County.....	Nov. 1-Nov. 30....	1		
Posey County.....	May 1-May 31....	1		
Pulaski County.....	May 1-June 30....	5		
Putnam County.....	Oct. 1-Oct. 31....	8		
Ripley County.....	June 1-June 30....	1		
St. Joseph County (South Bend included).	July 19-Sept. 12....	3		
Scott County.....	May 1-June 30....	5		
Shelby County.....	Oct. 1-Nov. 30....	5		
Spencer County.....	May 1-May 31....	4		
Starke County.....	June 1-June 30....	6		
Sullivan County.....	May 1-Oct. 31....	16		
Tippecanoe County.....	May 1-Nov. 30....	106		
Tipton County.....	June 1-June 30....	6		
Vanderburg County.....	May 1-Oct. 31....	10		One case from Pittsburg.
Vermillion County.....	May 1-June 30....	47		
Vigo County.....	May 1-Nov. 30....	174	1	
Wabash County.....	Nov. 1-Nov. 30....	1		
Warren County.....	May 1-Nov. 30....	11		
Warrick County.....	.....do.....	56		
Wayne County.....	May 1-June 30....	2		
Wells County.....	June 1-Nov. 30....	5		
White County.....	.....do.....	16		
Whitley County.....	May 1-Nov. 30....	16		
Places not mentioned.....	June 1-June 30....		4	
Total for State.....		1,488	17	
Iowa:				
Dubuque County (Cascade).....	Aug. 1-Aug. 31....	5		
Hamilton County (Webster City).....	.....do.....	10		
Harrison County (Cass Township).....	Sept. 1-Sept. 30....			Reported.
Jasper County (Des Moines Township and Vandalia).....	Aug. 1-Aug. 31....	9		
Marion County (Perry Township).....	.....do.....	1		
Polk County (Des Moines).....	June 1-July 4....	56		
Wapello County (Ottumwa).....	July 1-Aug. 31....	2		
Total for State.....		83		
Kentucky:				
Louisville.....	Oct. 1-Nov. 10....	27	2	
Total for State.....		27	2	
Louisiana:				
Baton Rouge.....	Oct. 25-Dec. 5....	4		
New Orleans.....	June 1-Dec. 12....	33	1	Six cases imported.
Total for State.....		37	1	
Maine:				
Arroostook County (including Grand Isle, Fort Kent, Madawaska Township, and Van Buren).....	July 4-Nov. 30....	124		
Bangor.....	To Nov. 10....	117		
Beaver.....	Aug. 28....	1		

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Illinois:				
Bond County (Sorento).....	Nov. 1-Nov. 30	2		
Calhoun County (Bellevue).....	do	5		
Christian County (Millersville, Assumption).....	do	11		
Clark County (Casey Township, Moriah, Westfield).....	do	50	2	
Coles County (Charleston).....	do	6	1	
Cook County (Chicago, Lemont, Orland).....	June 28-Dec. 11	287	10	
Cumberland County (Hazel Dell).....	Nov. 1-Nov. 30	2		
Gallatin County (Ridgeway).....	do	10		
Grundy County (South Wilmington).....	do	10	1	
Lawrence County (Russellville, Russel Township, Allison Township).....	do	25	1	
Logan County (Atlanta).....	do	1		
La Salle County (Streator).....	do	16	2	
Macon County (Argenta).....	do	3		
Marion County (Haines Township, Harris Township).....	do	10	1	
McLean County (Bloomington, Heyworth, Shirley).....	do	35	2	
Randolph County (Coulterville).....	do	6	1	
St. Clair County (Belleville, Freeburg, Lenzburg, Millstadt, New Athens).....	June 13-Dec. 12	117	15	
Vermilion County (Danville, Rankin).....	July 11-Nov. 30	10	1	
Washington County (Plum Hill Township).....	Nov. 1-Nov. 30	5		
Whiteside County (Sterling).....	do	3		
Will County (Lockport, Joliet, Du Page Township).....	do	25	2	
Williamson County (Granville, Marion).....	do	12	1	
Total for State		651	40	
Indiana:				
Adams County.....	June 1-June 30	1		
Allen County.....	June 1-Nov. 30	17		
Benton County.....	May 1-Nov. 30	21		
Blackford County.....	June 1-June 30	1		
Boone County.....	May 1-Oct. 31	8	1	
Brown County.....	May 1-June 30	18		
Carroll County.....	May 1-Nov. 30	8		
Cass County.....	May 1-June 30	44		
Clark County.....	do	9		
Clay County.....	May 1-Nov. 30	111		
Clinton County.....	Oct. 1-Nov. 30	2		
Crawford County.....	May 1-Nov. 30	14	2	
Davless County.....	do	59	2	
Dearborn County.....	June 1-June 30	1		
Decatur County.....	May 1-June 30	21		
DeKalb County.....	May 1-Nov. 30	8		
Delaware County.....	May 1-June 30	28		
Dubois County.....	Oct. 1-Nov. 30	31		
Fayette County.....	June 1-June 30	2		
Floyd County.....	May 1-Oct. 31	8		
Fountain County.....	May 1-Nov. 30	18		
Fulton County.....	do	17		
Gibson County.....	May 1-Oct. 31	12		
Grant County.....	May 1-Nov. 30	46		
Greene County.....	May 1-May 31	7	1	
Hamilton County.....	Oct. 1-Oct. 31	1		
Hancock County.....	Nov. 1-Nov. 30	1		
Harrison County.....	June 1-June 30	5		
Hendricks County.....	May 1-June 30	11		
Howard County (Kokomo included).....	May 1-Nov. 30	22		
Huntington County.....	May 1-May 31	1		
Jackson County.....	do	1		
Jasper County.....	do	30	1	
Jennings County.....	May 1-Nov. 30	6		
Johnson County.....	May 1-May 31	5		
Knox County.....	May 1-June 30	13		
Lake County.....	June 1-Nov. 30	12		

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
<i>Indiana—Continued.</i>				
Laporte County.....	May 1-Oct. 31.....	33		
Lawrence County.....	May 1-June 30.....	19		
Madison County (Elwood included).	May 1-Oct. 31.....	49		
Marion County (Indianapolis included).	.....do.....	33	1	
Marshall County.....	Oct. 1-Nov. 30.....	29		
Martin County.....	May 1-Nov. 30.....	27		
Miami County.....	May 1-June 30.....	14		
Monroe County.....	May 1-Nov. 30.....	30		
Montgomery County.....	.....do.....	3		
Morgan County.....	.....do.....	7		
Newton County.....	May 1-May 31.....	3		
Noble County.....	May 1-June 30.....	2		
Orange County.....	May 1-Nov. 30.....	85		
Owen County.....	May 1-May 31.....	4		
Parke County.....	May 1-Nov. 30.....	22	1	
Perry County.....	May 1-Oct. 31.....	3		
Pike County.....	Nov. 1-Nov. 30.....	1		
Posey County.....	May 1-May 31.....	1		
Pulaski County.....	May 1-June 30.....	5		
Putnam County.....	Oct. 1-Oct. 31.....	8		
Ripley County.....	June 1-June 30.....	1		
St. Joseph County (South Bend included).	July 19-Sept. 12.....	3		
Scott County.....	May 1-June 30.....	5		
Shelby County.....	Oct. 1-Nov. 30.....	5		
Spencer County.....	May 1-May 31.....	4		
Starke County.....	June 1-June 30.....	6		
Sullivan County.....	May 1-Oct. 31.....	16		
Tippecanoe County.....	May 1-Nov. 30.....	106		
Tipton County.....	June 1-June 30.....	6		
Vanderburg County.....	May 1-Oct. 31.....	10		One case from Pittsburg.
Vermillion County.....	May 1-June 30.....	47		
Vigo County.....	May 1-Nov. 30.....	174	1	
Wabash County.....	Nov. 1-Nov. 30.....	1		
Warren County.....	May 1-Nov. 30.....	11		
Warrick County.....	.....do.....	56		
Wayne County.....	May 1-June 30.....	2		
Wells County.....	June 1-Nov. 30.....	5		
White County.....	.....do.....	16		
Whitley County.....	May 1-Nov. 30.....	16		
Places not mentioned.....	June 1-June 30.....		4	
Total for State.....		1,488	17	
<i>Iowa:</i>				
Dubuque County (Cascade).....	Aug. 1-Aug. 31.....	5		
Hamilton County (Webster City).....	.....do.....	10		
Harrison County (Cass Township).....	Sept. 1-Sept. 30.....			Reported.
Jasper County (Des Moines Township and Vandalia).....	Aug. 1-Aug. 31.....	9		
Marion County (Perry Township).....	.....do.....	1		
Folk County (Des Moines).....	.....do.....	4		
Wapello County (Tumwa).....	.....do.....	31		
Total.....				
<i>Kentucky:</i>				
Larley.....				
Total.....				
<i>Louisiana:</i>				
Baton Rouge.....				
New Orleans.....				

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Maine—Continued.				
Belfast	Sept. 19	1		Imported.
Brewer	Sept. 17-Nov. 4	45		
Camden	Oct. 29			Present.
Oldtown	Sept. 26-Nov. 26	25		
Orono	Oct. 29-Nov. 26	1		
Total for State		314		
Maryland:				
Baltimore	June 28-Oct. 17	3	1	
Cumberland	May 1-Oct. 31	48	7	
Total for State		51	8	
Massachusetts:				
Boston	Oct. 25-Dec. 5	2		
Cambridge	Sept. 27-Oct. 3	1		
Fall River	June 20-Sept. 26	67	2	
Haverhill	Nov. 1-Dec. 9	3		
Lawrence	Nov. 8-Nov. 21	2		
Lowell	Nov. 22-Nov. 28	1		
New Bedford	July 1-Oct. 24	4		
North Adams	Dec. 6-Dec. 12	1		
Taunton	June 20-Oct. 3	9		
Vineyard Haven	Sept. 21	1		On sch. Orozimbo, from Calais, Me.
Total for State		91	2	
Michigan:				
Detroit	June 16-Dec. 12	57	2	
Flint	June 13-Dec. 12	4		
Grand Rapids	June 13-Aug. 22	28		
Hillsdale	Oct. 1-Oct. 31		1	
Marquette	Aug. 23-Aug. 29	1		
Port Huron	June 13-Dec. 12	53		
Iosco County (Sherman Town- ship)	Sept. 1-Sept. 30		1	
Marquette County (Wells Town- ship)	Aug. 1-Aug. 31		1	
Total for State		143	5	
Minnesota:				
Aitkin County	Nov. 2-Nov. 9	1		
Beltrami County	Nov. 17-Dec. 14	11		
Benton County	June 15-July 13	7		
Big Stone County	Dec. 8-Dec. 14	1		
Brown County	Aug. 3-Aug. 24	9		
Carver County	June 15-Nov. 23	5		
Cass County	June 30-Nov. 23	3		
Chisago County	Nov. 17-Nov. 23	4		
Clay County	July 1-July 27	1	1	
Columbia County	July 6-July 13	3		
Crow Wing County	June 15-Nov. 23	36		
Douglas County	July 6-Dec. 6	10		
Fillmore County	Sept. 7-Sept. 14	6		
Freeborn County	July 21-July 27	2		
Goodhue County	Oct. 20-Oct. 26	1		
Grant County	June 15-July 20	6	1	
Hennepin County	June 15-Nov. 30	11	1	
Houston County	June 30-July 6	1		
Hubbard County	July 21-July 27	1		
Isanti County	June 15-Nov. 23	14		
Jackson County	June 15-July 13	14		
Kandiyohi County	June 15-Dec. 6	56		
Lac qui Parle County	June 22-June 29	2		
Lincoln County	July 13-Aug. 3	3		
McLeod County	June 22-Aug. 10	4		
Meeker County	June 15-Aug. 3	6		
Morrison County	June 15-Dec. 14	21		
Nobles County	do	5		
Norman County	June 22-June 29	7		
Ottertail County	Oct. 20-Nov. 30	6		
Pine County	June 15-Aug. 3	3		
Pipestone County	June 30-July 6	1		
Polk County	Aug. 24-Nov. 2	2		
Ramsey County	June 15-Dec. 7	26	1	

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Minnesota—Continued.				
Redwood County	Oct. 13-Oct. 19	2		
Renville County	June 30-Dec. 7	31		
St. Louis County	June 22-Nov. 9	8		
Scott County	July 6-July 13	1		
Sherburne County	June 15-June 22	1		
Sibley County	June 30-July 6	9		
Stearns County	June 15-Dec. 14	168	1	
Steele County	July 6-July 13	1		
Stevens County	Sept. 14-Oct. 26	8		
Swift County	July 6-Aug. 10	13		
Todd County	July 13-Nov. 14	21		
Waseca County	July 21-Aug. 31	3		
Washington County	Dec. 8-Dec. 14	1		
Wilkin County	Aug. 18-Oct. 26	2		
Winona County	July 6-July 13	2		
Wright County	July 6-Oct. 26	7	2	
Yellow Medicine County	June 15-Aug. 31	10		
Kandiyohi County, not previously reported.		21		
Do	Aug., Sept., and Oct.	32		
Pine County, not previously reported.		9		
Stearns County, not previously reported.		40		
Todd County, not previously reported.		8		
Waseca County, not previously reported.		5		
Other parts of the State not previously reported.			1	
Total for State		692	8	
Mississippi:				
Miss Point	Aug. 28	2		
Natchez	July 4-Dec. 13	49		
Total for State		51		
Missouri:				
St. Louis	June 16-Dec. 5	39		
Total for State		39		
Montana:				
Helena	June 1-June 30	1		
Total for State		1		
Nebraska:				
Omaha	Aug. 2-Aug. 31	3		
South Omaha	June 1-July 1	6		
Total for State		9		
New Hampshire:				
Manchester	June 13-Dec. 12	50		
Nashua	June 13-June 20	1		
Total for State		51		
New Jersey:				
Bordentown	June 6-June 27	24	5	
Camden	July 5-Dec. 19	21	3	
Hoboken	Aug. 17-Aug. 23	1		
Jersey City	Oct. 19-Oct. 25	1		
Trenton	June 20-June 27	1		
Total for State		48	8	
New York:				
Buffalo	Nov. 9	1		
Elmira	June 13-June 20	2		
New York	July 4-Dec. 12	18	1	
Niagara Falls	Sept. 6-Oct. 10	7		
Rochester	July 16-July 21	1		
Total for State		29	1	

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
North Carolina:				
Alamance County	Aug. 1-Oct. 31	5	.....
Ashe County	July 1-July 31	1	.....
Bertie County	July 1-Aug. 31	4	.....
Buncombe County	May 1-Oct. 31	32	.....
Burke County	May 1-Aug. 31	11	.....
Cabarrus County	Aug. 1-Aug. 31	1	.....
Caswell County	Oct. 1-Oct. 31	2	.....
Catawba County	July 1-Aug. 31	3	.....
Chatham County	May 1-May 31	1	.....
Cleveland County	May 1-Aug. 31	10	.....
Columbus County	Aug. 1-Aug. 31	1	.....
Davidson County	Oct. 1-Oct. 31	40	.....
Davie County	May 1-Oct. 31	43	.....
Durham County	May 1-Aug. 31	29	.....
Forsyth County	May 1-Oct. 31	39	.....
Gaston County	July 1-Aug. 31	6	.....
Graham County	May 1-May 31	2	.....
Guilford County	do	45	.....
Harnett County	Oct. 1-Oct. 31	10	.....
Henderson County	May 1-May 31	2	.....
Iredell County	Aug. 1-Aug. 31	5	.....
McDowell County	May 1-May 31	2	.....
Madison County	Aug. 1-Oct. 31	40	.....
Mecklenburg County	May 1-May 31	2	.....
Moore County	do	1	.....
New Hanover County	May 1-July 31	2	.....
Pender County	July 1-July 31	1	.....
Person County	Oct. 1-Oct. 31	7	.....
Polk County	July 1-Aug. 31	2	.....
Randolph County	July 1-July 31	1	.....
Rockingham County	July 1-Aug. 31	4	.....
Rowan County	Oct. 1-Oct. 31	1	.....
Rutherford County	May 1-July 31	7	.....
Stanly County	July 1-July 31	4	.....
Surry County	May 1-Oct. 31	33	.....
Wake County	do	27	.....
Warren County	May 1-May 31	3	.....
Wayne County	Oct. 1-Oct. 31	1	.....
Wilkes County	May 1-May 31	2	.....
Wilson County	May 1-Oct. 31	5	.....
Yadkin County	July 1-July 31	26	.....
Total for State .....	.....	463	.....
North Dakota:				
Benson County	July 1-Aug. 31	1	.....
Billings County	do	1	.....
Bottineau County	do	1	.....
Cass County	Oct. 1-Oct. 31	1	.....
Cavaller County	May 1-Aug. 31	14	.....
Grand Forks County	July 1-Oct. 31	4	.....
Griggs County	May 1-Aug. 31	4	.....
Morton County	do	65	.....
Nelson County	July 1-Aug. 31	3	.....
Ramsey County	do	2	.....
Ransom County	Oct. 1-Oct. 31	11	.....
Richland County	July 1-Aug. 31	4	.....
Sargent County	do	2	.....
Stark County	May 1-July 31	6	.....
Towner County	Oct. 1-Oct. 31	5	.....
Traill County	May 1-Oct. 31	11	.....
Walsh County	July 1-Aug. 31	4	.....
Total for State .....	.....	139	.....
Ohio:				
Allen County	May 10-Aug. 8	9	.....
Ashtabula County	do	8	.....
Auglaize County	do	25	.....
Belmont County	do	32	1	
Brown County	do	8	.....
Butler County (Hamilton in- cluded)	do	18	2	
Champaign County	do	6	.....
Clark County	do	6	.....
Clermont County	do	1	.....
Columbiana County (East Liver- pool included)	do	18	.....

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Ohio—Continued.				
Crawford County.....	May 10-Aug. 8.....	2		
Cuyahoga County (Cleveland included).....	May 10-Nov. 21.....	18	1	
Defiance County.....	May 10-Aug. 8.....	6		
Delaware County.....	do.....	25		
Erie County.....	do.....	18	6	
Fairfield County.....	do.....	1	1	
Fayette County.....	do.....	1		
Franklin County (Columbus included).....	do.....	27	3	
Gallia County.....	do.....	15		
Geauga County.....	do.....	1		
Greene County.....	do.....	10		
Guernsey County.....	do.....	2		
Hamilton County (Cincinnati included).....	May 10-Dec. 18.....	140	5	
Hancock County.....	May 10-Aug. 8.....	18		
Harrison County.....	do.....	1		
Henry County.....	do.....	43		
Jackson County.....	do.....	7		
Jefferson County.....	do.....	18		
Lawrence County.....	do.....	101	11	
Logan County.....	do.....	4		
Lorain County (Lorain included).....	May 10-Oct. 3.....	6		
Lucas County (Toledo included).....	May 10-Sept. 5.....	49	2	
Mahoning County (Youngstown included).....	May 10-Dec. 12.....	72		
Marion County.....	May 10-Nov. 21.....	1		
Meigs County.....	do.....	2		
Miami County.....	do.....	12	2	
Monroe County.....	May 10-Nov. 14.....	2		
Montgomery County (Dayton included).....	May 10-Dec. 12.....	74	1	
Morrow County.....	May 10-Aug. 8.....	1		
Maskingum County (Zanesville included).....	do.....	49		
Paulding County.....	do.....	1		
Pickaway County.....	do.....	1		
Preble County.....	do.....	1		
Ross County.....	do.....	30		
Scioto County.....	do.....	9		
Seneca County.....	do.....	3		
Stark County.....	do.....	34		
Summit County.....	do.....	12		
Trumbull County (Warren included).....	May 10-Nov. 2.....	6		
Tuscarawas County.....	do.....	29		
Van Wert County.....	do.....	9		
Warren County.....	do.....	6		
Washington County.....	do.....	30	3	
Wyandot County.....	do.....	13		
Total for State.....		1,042	38	
Pennsylvania:				
Allegheny County (Allegheny, Pittsburgh, and McKeesport included).....	June 13-Dec. 12.....	1,093	207	Eight cases imported.
Armstrong County.....	June 1-Aug. 31.....	6		
Beaver County.....	June 1-Sept. 30.....	20		
Berks County (Reading).....	Nov. 24-Dec. 14.....	4		
Blair County (Altoona included).....	May 1-Dec. 12.....	20	2	Two cases imported.
Butler County (Butler included).....	May 1-Sept. 30.....	31		
Cambria County (Johnstown included).....	May 1-Dec. 12.....	98	10	
Cameron County.....	May 1-May 31.....	5		
Carbon County.....	June 1-June 30.....	5		
Center County.....	May 1-May 31.....	27		
Clarion County.....	do.....	2		
Clearfield County.....	May 1-Sept. 30.....	167		
Clinton County.....	July 1-July 31.....	1		
Columbia County.....	Aug. 1-Sept. 30.....	6		
Crawford County.....	May 1-July 31.....	11		
Delaware County.....	May 1-Sept. 30.....	28		
Elk County.....	May 1-May 31.....	3		

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1908, TO DECEMBER 25, 1908—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Pennsylvania—Continued.				
Erie County (Erie and Franklin included).	May 1-Dec. 12	25		
Fayette County	May 1-Sept. 30	57	1	
Forest County	May 1-Aug. 31	7		
Indiana County	May 1-July 31	14		
Jefferson County	July 1-July 31	11		
Lackawanna County (Scranton, Carbondale, and Dunmore included).	June 7-Dec. 7	73	1	
Lancaster County	Aug. 1-Aug. 31	1	1	
Luzerne County	May 1-May 31	1		
Lycoming County	May 1-July 31	25		
McKean County	June 1-June 30	1		
Mercer County	May 1-Sept. 30	9		
Montgomery County (Norristown included).	May 1-Dec. 12	16	1	
Northampton County	May 1-May 31	19	2	
Perry County	May 1-Aug. 31	40	2	
Philadelphia County	June 20-Dec. 19	810	170	
Pike County	June 1-June 30	2		
Potter County	June 1-July 31	24		
Schuylkill County	May 1-July 31	28		
Sullivan County	Aug. 1-Aug. 31	10		
Susquehanna County	June 1-July 31	128		
Tioga County	May 1-June 30	8		
Venango County	June 1-July 31	2		
Warren County	May 1-May 31	2		
Washington County	May 1-Sept. 30	18	6	
Wayne County	June 1-July 31	8		
Westmoreland County	May 1-Sept. 30	19	1	
Wyoming County	Aug. 1-Aug. 31	3		
Total for State		2,887	404	
Rhode Island:				
Providence	Nov. 1-Nov. 7	1		
Total for State		1		
South Carolina:				
Charleston	June 20-Nov. 14	30	3	
Greenville	June 20-Sept. 19	5		
Total for State		35	3	
Tennessee:				
Anderson County	Mar. 15-Sept. 15	24		
Blount County	do	4		
Bradley County	do	7		
Campbell County	do	69	2	
Carroll County	do	8		
Carter County	do	30		
Cheatham County	do	1		
Chester County	do	2		
Clatsborne County	do	50	2	
Cocke County	do	6		
Coffee County	do	5	1	
Crockett County	do	7		
Cumberland County	do	1		
Davidson County (Nashville included).	do	33		
Franklin County	do	13		
Gibson County	do	4		
Giles County	do	10		
Hamblen County	do	31		
Hamilton County (Chattanooga included).	do	783	23	
Hancock County	do	12		
Hardeman County	do	11		
Hardin County	do	1		
Hawkins County	do	16		
Haywood County	do	17	2	
Henderson County	do	9		
Henry County	do	40		
Houston County	do	3		
Humphreys County	do	12		
Jackson County	do	15		
James County	do	18		

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Tennessee—Continued.				
Jefferson County	Mar. 15-Sept. 15.	79		
Knox County (Knoxville)	do	186	2	
McMinn County	do	3		
Madison County	do	14		
Marion County	do	33	1	
Marshall County	do	1		
Maury County	do	1		
Monroe County	do	1		
Montgomery County	do	1		
Morgan County	do	10		
Obion County	do	45		
Rhea County	do	25	2	
Roane County	do	36	1	
Robertson County	do	10		
Rutherford County	do	4		
Scott County	do	15		
Shelby County (Memphis in- cluded).	Mar. 15-Dec. 12.	95		
Smith County	Mar. 15-Sept. 15.	13		
Stewart County	do	6		
Sullivan County	do	2		
Sumner County	do	5		
Union County	do	20		
Warren County	do	28		
White County	do	4		
Williamson County	do	1		
Total for State		1,875	36	
Texas:				
San Antonio	July 1-Nov. 30.	86	2	
Total for State		86	2	
Utah:				
Ogden	Aug. 1-Nov. 30.	2		Two cases imported.
Salt Lake City	June 6-Nov. 28.	52		
Total for State		54		
Virginia:				
Lynchburg	Aug. 1-Aug. 31.		1	
Pocahontas	Aug. 29	1		
Total for State		1	1	
Washington:				
Adams County	Aug. 1-Nov. 30.	2		
Clark County	June 1-Nov. 30.	52		
Columbia County	June 1-Aug. 31.	8		
Cowlitz County	July 1-Aug. 31.	18		
Douglas County	June 1-Oct. 31.	6		
Island County	Aug. 1-Sept. 30.	14		
King County (Seattle included)	June 1-Nov. 30.	32	8	
Kitsap County	June 1-June 30.	1		
Klickitat County	Oct. 1-Nov. 30.	4		
Lewis County	Sept. 1-Sept. 30.	16		
Lincoln County	Oct. 1-Nov. 30.	6		
Okanogan County	June 1-Aug. 31.	3	1	
Pierce County (Tacoma included)	do	5		
Skagit County	Sept. 1-Nov. 30.	17		
Snohomish County	June 1-Sept. 30.	6		
Spokane County (Spokane in- cluded).	June 1-Nov. 30.	40	5	3 cases imported.
Stevens County	Sept. 1-Oct. 31.	13		
Thurston County	July 1-July 31.	4		
Walla Walla County	June 1-Oct. 31.	44		
Whatcom County	July 1-Nov. 30.	7		
Whitman County	July 1-Oct. 31.	20	2	
Yakima County	July 1-Aug. 31.	1		
Total for State		319	11	
West Virginia:				
Jefferson County	Oct. 1-Oct. 15	14		
Wheeling	Mar. 1-Sept. 30.	51	7	
Total for State		65	7	

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Wisconsin:				
40 counties, 87 places.....	Feb. 1-Feb. 28.....	495	3	
39 counties, 90 places.....	Mar. 1-Mar. 31.....	412	4	
31 counties, 50 places.....	Apr. 1-May 30.....	194	1	
32 counties, 53 places.....	May 1-May 31.....	259	3	
26 counties, 34 places.....	June 1-June 30.....	238		
6 counties, 6 places.....	July 1-July 11.....	15		
7 counties, 10 places.....	July 12-July 31.....	50		
8 counties, 8 places.....	Aug. 1-Aug. 31.....	24		
5 counties, 6 places.....	Sept. 1-Sept. 30.....	15	1	
Milwaukee.....	Oct. 4-Dec. 12.....	30		
Total for State.....		1,732	12	
Grand total.....		13,739	606	

DECEMBER 26, 1903, TO JUNE 24, 1904.

Alaska:				
Hoonah.....	May 17.....	3		
Juneau.....	May 15-June 4.....	5		
Killisnoo.....	May 17.....	2		
Total for Territory.....		10		
Arkansas:				
Fort Smith.....	Dec. 13-Feb. 20.....	6		
Little Rock.....	Apr. 1-May 31.....	29		
Total for State.....		35		
California:				
Berkeley.....	Jan. 1-Feb. 29.....	2		
Escondido.....	Feb. 23.....	1		
Fresno.....	Dec. 1-31.....	1		
Los Angeles.....	Dec. 27-May 28.....	19		
Oakland.....	Jan. 1-31.....		1	
Sacramento.....	Apr. 1-30.....	1		
San Francisco.....	Dec. 7-June 5.....	56	4	
Total for State.....		80	5	
Colorado:				
Bent County.....	Feb. 1-29.....	4		
Boulder County.....	Dec. 1-Apr. 30.....	31		
Chaffee County.....	Feb. 1-Apr. 30.....	8		
Conejos County.....	Jan. 1-Feb. 29.....	37		
Denver County (Denver).....	Dec. 1-Mar. 31.....	44	1	
Douglas County.....	Mar. 1-Mar. 31.....	1		
Eagle County.....	Mar. 1-Apr. 30.....	5		
El Paso County (Colorado Springs included).....	Dec. 1-Feb. 29.....	37		
Gilpin County.....	Apr. 1-30.....	1		
Huerfano County.....	Dec. 1-Mar. 31.....	2		
Kit Carson County.....	Dec. 1-Apr. 30.....	24		
Lake County.....	Dec. 1-Feb. 29.....	3		
La Plata County.....	Apr. 1-30.....	1		
Larimer County.....	Dec. 1-Apr. 30.....	106		
Las Animas County.....	Dec. 1-Jan. 31.....	4		
Mesa County.....	Dec. 1-31.....	1		
Otero County.....	Jan. 1-Mar. 31.....	47		
Pitkin County.....	Dec. 1-Jan. 31.....	2		
Pueblo County.....	Feb. 1-Apr. 30.....	11		
Rio Grande County.....	Dec. 1-31.....	11		
Route County.....	Jan. 1-Feb. 29.....	14		
Washington County.....	Dec. 1-Jan. 31.....	3		
Weld County.....	Dec. 1-Apr. 30.....	134		
Yuma County.....	Dec. 1-31.....	1		
Total for State.....		532	1	
Delaware:				
Wilmington.....	Feb. 21-June 18.....	2	3	
Total for State.....		2	3	

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

DECEMBER 26, 1903, TO JUNE 24, 1904—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
District of Columbia:				
Washington.....	Jan. 10-June 4...	54		
Total for District.....		54		
Florida:				
Escambia County (Pensacola)...	Nov. 1-Jan. 16...	11		
Dade County (Fort Lauderdale)...	Nov. 1-Dec. 31...	1		
Duval County (Jacksonville)....	Nov. 1-June 11...	42		
Leon County (Tallahassee).....	Nov. 1-Dec. 31...	2		
Polk County (Bartow).....	Nov. 1-Dec. 31...	1		
Walton County.....	Jan. 2-16.....	88		
Total for State.....		145		
Georgia:				
Darien.....	Jan. 14.....	2		
Liberty County.....	Feb. 12.....		7	
Macon.....	May 16-June 11..	13		
Total for State.....		15	7	
Illinois:				
Belleville.....	Dec. 13-Mar. 31 ..	29	2	
Cairo.....	Jan. 1-Feb. 6.....	13		
Chicago.....	Dec. 20-June 18..	101	1	
Danville.....	Dec. 13-June 4.....	53		
East St. Louis.....	May 1-May 31.....	22	1	
Evanston.....	Jan. 1-Dec. 31, 1903	3		
Freeport.....	Jan. 10-16.....	1		
Galesburg.....	Mar. 6-26.....	7		
Peoria.....	Mar. 1-31.....	10		
Springfield.....	Feb. 26-Mar. 8...	3		
Total for State.....		242	4	
Indiana:				
Evansville.....	Dec. 13-Jan. 20...	22		
Kokomo.....	Apr. 17-23.....	1		
South Bend.....	Mar. 27-May 14...	16	1	
Total for State.....		39	1	
Iowa:				
Des Moines.....	Jan. 23-Apr. 30...	8		
Dubuque.....	Dec. 27-June 11..	5	1	
Keokuk.....	May 1-May 31.....	1		
Total for State.....		14	1	
Kentucky:				
Burlington.....	Mar. 1-28.....	16		
Covington.....	Mar. 13-June 11..	25		
Louisville.....	Oct. 1-Apr. 30....	66	16	
Springfield.....	Mar. 22-28.....	6		
Total for State.....		113	16	
Louisiana:				
New Orleans.....	Dec. 13-June 11..	119	5	40 Imported.
Total for State.....		119	5	
Maine:				
Athens.....	Dec. 31.....			Present.
Biddeford.....	Dec. 13-19.....	1		
Bradley.....	Mar. 18.....	2		
Brewer.....	Dec. 19.....	1		
Brighton.....	Dec. 31.....			Do.
Calais.....	Feb. 7-18.....	10		
Columbia.....	June 3.....	2		
Columbia Falls.....	May 17-June 3...	13		
Jonesport.....	May 16-26.....	23		
Machiasport.....	May 31.....	8		
Madawaska region.....	Dec. 1-Apr. 9....	67		
Madison.....	Jan. 24.....	1		
Milford.....	Jan. 7.....	2		
Oldtown.....	To Dec. 24.....	9		

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Wisconsin:				
40 counties, 87 places.....	Feb. 1-Feb. 28....	495	3	
39 counties, 90 places.....	Mar. 1-Mar. 31....	412	4	
31 counties, 50 places.....	Apr. 1-Apr. 30....	194	1	
32 counties, 53 places.....	May 1-May 31....	259	3	
26 counties, 84 places.....	June 1-June 30....	238		
6 counties, 6 places.....	July 1-July 11....	15		
7 counties, 10 places.....	July 12-July 31....	50		
8 counties, 8 places.....	Aug. 1-Aug. 31....	24		
5 counties, 6 places.....	Sept. 1-Sept. 30....	15	1	
Milwaukee.....	Oct. 4-Dec. 12....	30		
Total for State.....		1,732	12	
Grand total.....		13,739	606	

DECEMBER 26, 1903, TO JUNE 24, 1904.

Alaska:				
Hoonah.....	May 17.....	3		
Juneau.....	May 15-June 4....	5		
Killiknoo.....	May 17.....	2		
Total for Territory.....		10		
Arkansas:				
Fort Smith.....	Dec. 13-Feb. 20....	6		
Little Rock.....	Apr. 1-May 31....	29		
Total for State.....		35		
California:				
Berkeley.....	Jan. 1-Feb. 29....	2		
Escondido.....	Feb. 23.....	1		
Fresno.....	Dec. 1-31.....	1		
Los Angeles.....	Dec. 27-May 28....	19		
Oakland.....	Jan. 1-31.....		1	
Sacramento.....	Apr. 1-30.....	1		
San Francisco.....	Dec. 7-June 5....	56	4	
Total for State.....		80	5	
Colorado:				
Bent County.....	Feb. 1-29.....	4		
Boulder County.....	Dec. 1-Apr. 30....	31		
Chaffee County.....	Feb. 1-Apr. 30....	8		
Conejos County.....	Jan. 1-Feb. 29....	37		
Denver County (Denver).....	Dec. 1-Mar. 31....	44	1	
Douglas County.....	Mar. 1-Mar. 31....	1		
Eagle County.....	Mar. 1-Apr. 30....	5		
El Paso County (Colorado Springs included).....	Dec. 1-Feb. 29....	37		
Gilpin County.....	Apr. 1-30.....	1		
Huerfano County.....	Dec. 1-Mar. 31....	2		
Kit Carson County.....	Dec. 1-Apr. 30....	24		
Lake County.....	Dec. 1-Feb. 29....	3		
La Plata County.....	Apr. 1-30.....	1		
Larimer County.....	Dec. 1-Apr. 30....	106		
Las Animas County.....	Dec. 1-Jan. 31....	4		
Mesa County.....	Dec. 1-31.....	4		
Otero County.....	Jan. 1-Mar. 31....	47		
Pitkin County.....	Dec. 1-Jan. 31....	2		
Pueblo County.....	Feb. 1-Apr. 30....	11		
Rio Grande County.....	Dec. 1-31.....	11		
Routt County.....	Jan. 1-Feb. 29....	14		
Washington County.....	Dec. 1-Jan. 31....	3		
Weid County.....	Dec. 1-Apr. 30....	134		
Yuma County.....	Dec. 1-31.....	1		
Total for State.....		532	1	
Delaware:				
Wilmington.....	Feb. 21-June 18....	2	3	
Total for State.....		2	3	

Surgeon-General, Public Health and continued.

904—Continued.

Deaths.	Remarks.
54	
54	
11	
1	
42	
2	
1	
88	
45	
2	
13	7
15	7
29	2
13	
01	1
53	
22	1
3	
1	
7	
10	
3	
42	4
22	
1	
16	1
39	1
8	
5	1
1	
14	1
16	
25	
66	16

6 40 imported.

Persons

Do.

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Wisconsin:				
40 counties, 87 places.....	Feb. 1-Feb. 28.....	495	3	
39 counties, 90 places.....	Mar. 1-Mar. 31.....	412	4	
31 counties, 50 places.....	Apr. 1-Apr. 30.....	194	1	
32 counties, 53 places.....	May 1-May 31.....	259	3	
26 counties, 34 places.....	June 1-June 30.....	238		
6 counties, 6 places.....	July 1-July 11.....	15		
7 counties, 10 places.....	July 12-July 31.....	50		
8 counties, 8 places.....	Aug. 1-Aug. 31.....	24		
5 counties, 6 places.....	Sept. 1-Sept. 30.....	15	1	
Milwaukee.....	Oct. 4-Dec. 12.....	30		
Total for State.....		1,732	12	
Grand total.....		13,739	606	

DECEMBER 26, 1903, TO JUNE 24, 1904.

Alaska:				
Hoonah.....	May 17.....	3		
Juneau.....	May 15-June 4.....	5		
Killiknoo.....	May 17.....	2		
Total for Territory.....		10		
Arkansas:				
Fort Smith.....	Dec. 13-Feb. 20.....	6		
Little Rock.....	Apr. 1-May 31.....	29		
Total for State.....		35		
California:				
Berkeley.....	Jan. 1-Feb. 29.....	2		
Escondido.....	Feb. 23.....	1		
Fresno.....	Dec. 1-31.....	1		
Los Angeles.....	Dec. 27-May 28.....	19		
Oakland.....	Jan. 1-31.....		1	
Sacramento.....	Apr. 1-30.....	1		
San Francisco.....	Dec. 7-June 5.....	56	4	
Total for State.....		80	5	
Colorado:				
Bent County.....	Feb. 1-29.....	4		
Boulder County.....	Dec. 1-Apr. 30.....	31		
Chaffee County.....	Feb. 1-Apr. 30.....	8		
Conejos County.....	Jan. 1-Feb. 29.....	37		
Denver County (Denver).....	Dec. 1-Mar. 31.....	44	1	
Douglas County.....	Mar. 1-Mar. 31.....	1		
Eagle County.....	Mar. 1-Apr. 30.....	5		
El Paso County (Colorado Springs included).....	Dec. 1-Feb. 29.....	37		
Gilpin County.....	Apr. 1-30.....	1		
Huerfano County.....	Dec. 1-Mar. 31.....	2		
Kit Carson County.....	Dec. 1-Apr. 30.....	24		
Lake County.....	Dec. 1-Feb. 29.....	3		
La Plata County.....	Apr. 1-30.....	1		
Larimer County.....	Dec. 1-Apr. 30.....	106		
Las Animas County.....	Dec. 1-Jan. 31.....	4		
Mesa County.....	Dec. 1-31.....	1		
Otero County.....	Jan. 1-Mar. 31.....	47		
Pitkin County.....	Dec. 1-Jan. 31.....	2		
Pueblo County.....	Feb. 1-Apr. 30.....	11		
Rio Grande County.....	Dec. 1-31.....	11		
Routt County.....	Jan. 1-Feb. 29.....	14		
Washington County.....	Dec. 1-Jan. 31.....	3		
Weld County.....	Dec. 1-Apr. 30.....	134		
Yuma County.....	Dec. 1-31.....	1		
Total for State.....		532	1	
Delaware:				
Wilmington.....	Feb. 21-June 18.....	2	3	
Total for State.....		2	3	

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

DECEMBER 26, 1903, TO JUNE 24, 1904—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
District of Columbia:				
Washington.....	Jan. 10-June 4...	54		
Total for District.....		54		
Florida:				
Escambia County (Pensacola)...	Nov. 1-Jan. 16...	11		
Dade County (Fort Lauderdale)...	Nov. 1-Dec. 31...	1		
Duval County (Jacksonville)...	Nov. 1-June 11...	42		
Leon County (Tallahassee).....	Nov. 1-Dec. 31...	2		
Polk County (Bartow).....	Nov. 1-Dec. 31...	1		
Walton County.....	Jan. 2-16.....	88		
Total for State.....		145		
Georgia:				
Darien.....	Jan. 14.....	2		
Liberty County.....	Feb. 12.....		7	
Macon.....	May 15-June 11..	13		
Total for State.....		15	7	
Illinois:				
Belleville.....	Dec. 13-Mar. 31..	29	2	
Cairo.....	Jan. 1-Feb. 5.....	13		
Chicago.....	Dec. 20-June 18..	101	1	
Danville.....	Dec. 13-June 4.....	53		
East St. Louis.....	May 1-May 31.....	22	1	
Evanston.....	Jan. 1-Dec. 31, 1903	3		
Freeport.....	Jan. 10-16.....	1		
Galesburg.....	Mar. 6-26.....	7		
Peoria.....	Mar. 1-31.....	10		
Springfield.....	Feb. 26-Mar. 3...	3		
Total for State.....		242	4	
Indiana:				
Evansville.....	Dec. 13-Jan. 20...	22		
Kokomo.....	Apr. 17-23.....	1		
South Bend.....	Mar. 27-May 14..	16	1	
Total for State.....		39	1	
Iowa:				
Des Moines.....	Jan. 23-Apr. 30...	8		
Dubuque.....	Dec. 27-June 11..	5	1	
Keokuk.....	May 1-May 31.....	1		
Total for State.....		14	1	
Kentucky:				
Burlington.....	Mar. 1-28.....	16		
Covington.....	Mar. 13-June 11..	25		
Louisville.....	Oct. 1-Apr. 30...	66	16	
Springfield.....	Mar. 22-28.....	6		
Total for State.....		113	16	
Louisiana:				
New Orleans.....	Dec. 13-June 11..	119	5	40 imported.
Total for State.....		119	5	
Maine:				
Athens.....	Dec. 31.....			Present.
Biddeford.....	Dec. 13-19.....	1		
Bradley.....	Mar. 18.....	2		
Brewer.....	Dec. 19.....	1		
Brighton.....	Dec. 31.....			Do.
Caleis.....	Feb. 7-18.....	10		
Columbia.....	June 3.....	2		
Columbia Falls.....	May 17-June 3...	13		
Jonesport.....	May 16-26.....	23		
Machiasport.....	May 31.....	8		
Madawaska region.....	Dec. 1-Apr. 9...	67		
Madison.....	Jan. 28.....	1		
Millford.....	Jan. 7.....	2		
Oldtown.....	To Dec. 24.....	9		

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

DECEMBER 26, 1903, TO JUNE 24, 1904—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Maine—Continued.				
Orono.....	Dec. 19-Jan. 22.....	3		
Smithfield.....	Jan. 21.....	1		
Stacyville.....	.....do.....	11		
Van Buren.....	Jan. 1-31.....	7		
Total for State.....		161		
Maryland:				
Baltimore.....	Jan. 17-June 18.....	61	4	
Cumberland.....	Feb. 1-Mar. 31.....	4		
Total for State.....		65	4	
Massachusetts:				
Brockton.....	Dec. 20-26.....	1		
Fall River.....	Dec. 20-Mar. 19.....	2		
Haverhill.....	Dec. 20-26.....	1		
Lawrence.....	Jan. 10-16.....	1		
Lowell.....	Mar. 13-Apr. 2.....	2	1	
Total for State.....		7	1	
Michigan:				
Detroit.....	Dec. 13-June 11.....	49	1	
Flint.....	Dec. 13-Feb. 6.....	5		
Grand Rapids.....	Jan. 2-June 11.....	24		
Port Huron.....	Dec. 16-23.....	4		
Bay County.....	Feb. 1-29.....		1	
Lapeer County.....	.....do.....		1	
Muskegon.....	Mar. 1-31.....		1	
Oscoda County.....	.....do.....		1	
St. Joseph County.....	.....do.....		1	
Total for State.....		82	6	
Minnesota:				
Altkin County.....	Feb. 9-29.....	6		
Anoka County.....	Apr. 5-May 9.....	2		
Becker County.....	Mar. 1-May 16.....	53		
Beltrami County.....	Jan. 5-May 30.....	52	1	
Benton County.....	May 8-9.....	1		
Blue Earth County.....	Apr. 26-May 9.....	2		
Cass County.....	Jan. 26-Apr. 11.....	14		
Chippewa County.....	Feb. 9-Apr. 18.....	26		
Chisago County.....	Jan. 12-Apr. 4.....	13		
Clay County.....	Dec. 22-June 13.....	29		
Cottonwood County.....	Feb. 2-15.....	2		
Crow Wing County.....	Jan. 5-June 13.....	6		
Dakota County.....	Feb. 2-8.....	2		
Dodge County.....	Mar. 15-Apr. 18.....	13		
Douglas County.....	Jan. 26-June 13.....	57		
Fillmore County.....	Mar. 1-7.....	2		
Freeborn County.....	Apr. 6-11.....	1		
Grant County.....	Mar. 22-Apr. 18.....	7		
Goodhue County.....	Jan. 5-May 30.....	11		
Hennepin County.....	Dec. 22-June 13.....	207	15	
Houston County.....	May 24-June 6.....	2		
Hubbard County.....	Jan. 19-June 6.....	16		
Isanti County.....	Dec. 22-May 23.....	36		
Itaska County.....	Dec. 15-June 6.....	24		
Jackson County.....	Jan. 5-11.....	1		
Kanabec County.....	May 24-30.....	1		
Kandiyohi County.....	Dec. 15-June 13.....	98		
Kittson County.....	Apr. 5-18.....	5		
Lac qui Parle County.....	Apr. 26-June 13.....	6		
Lake County.....	May 21-30.....	5		
Lesueur County.....	Apr. 5-May 30.....	9	1	
Lyon County.....	May 16-23.....	1		
Meeker County.....	Feb. 16-June 13.....	6		
Millelacs County.....	Feb. 16-May 30.....	8	1	
Morrison County.....	Dec. 15-May 30.....	31		
Mower County.....	Feb. 2-8.....	1		
Murray County.....	May 24-June 13.....	4		
Norman County.....	Feb. 2-June 13.....	18		
Ottertail County.....	Dec. 15-June 6.....	157		
Pine County.....	Feb. 2-May 16.....	9	1	
Pipestone County.....	Mar. 15-June 13.....	25		
Polk County.....	Jan. 6-Apr. 18.....	6		

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

DECEMBER 26, 1903, TO JUNE 24, 1904—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Minnesota—Continued.				
Pope County.....	Mar. 15-May 16..	5		
Ramsey County.....	Dec. 29-May 23..	42	1	
Redwood County.....	Jan. 19-June 6..	6	1	
Renville County.....	Jan. 19-Apr. 18..	9		
Rice County.....	Jan. 19-May 30..	10		
Roseau County.....	Jan. 12-18.....	10		
St. Louis County.....	Jan. 12-May 9..	13		
Scott County.....	Mar. 15-May 16..	17		
Sherburne County.....	May 3-16.....	2		
Sibley County.....	Feb. 9-15.....	1		
Stearns County.....	Dec. 15-June 13..	237		
Steele County.....	Jan. 5-18.....	2		
Stevens County.....	Mar. 15-May 9..	3		
Swift County.....	Jan. 26-May 16..	29		
Todd County.....	Dec. 15-June 13..	158	1	
Wabasha County.....	Jan. 26-Apr. 18..	27		
Wadena County.....	Jan. 12-Apr. 25..	3		
Washington County.....	Dec. 22-May 30..	23	1	
Wilkin County.....	Jan. 5-Apr. 25..	18		
Winona County.....	Apr. 26-June 6..	10		
Wright County.....	Mar. 1-June 13..	16		
Yellow Medicine County.....	May 15-23.....	1		
Cases not previously reported in Hennepin County.....		11		
Cases not previously reported in Kandiyohi County.....		13		
Old cases not reported previously in Stearns County.....		11		
Total for State.....		1,652	23	
Missouri:				
St. Louis.....	Dec. 20-June 11..	242	10	
Total for State.....		242	10	
Montana:				
Butte.....	Jan. 1-Feb. 29....	16		
Helena.....	Jan. 1-31.....	1		
Total for State.....		17		
Nebraska:				
Omaha.....	Dec. 20-June 11..	19	1	
Total for State.....		19	1	
New Hampshire:				
Manchester.....	Dec. 13-June 17..	99	1	
Nashua.....	Jan. 3-23.....	3		
Total for State.....		102	1	
New Jersey:				
Camden.....	Dec. 27-Apr. 30..	28	5	Imported. Do.
Jersey City.....	Mar. 21-27.....	1		
Newark.....	Feb. 1-6.....	1		
Plainfield.....	Jan. 17-23.....	1		
Trenton.....	Dec. 27-Apr. 23..	43	8	
Total for State.....		74	13	
New York:				
Buffalo.....	Dec. 20-June 4..	50		
Elmira.....	Feb. 7-13.....	1		
New York.....	Dec. 20-June 11..	30	5	
Niagara Falls.....	Feb. 14-Apr. 12..	15		
Saratoga Springs.....	Dec. 1-31.....	1		
Total for State.....		97	5	
North Carolina:				
Alamance County.....	Jan. 1-31.....	122		Present.
Anson County.....	do.....			
Bladen County.....	do.....	1		
Buncombe County.....	do.....	8		
Cabarrus County.....	do.....	1		
Chowan County.....	do.....	1		

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

DECEMBER 26, 1903, TO JUNE 24, 1904—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
North Carolina—Continued				
Cleveland County	Jan. 1-31	4		
Cumberland County	do	3		
Davidson County	do	72		
Davie County	do	2		
Durham County	do	10		
Edgecombe County	do	8	2	
Forsyth County	do	17		
Gaston County	do	17		
Guilford County	do	8		
Harnett County	do	3		
Henderson County	do	3		
Iredell County	do	8		
Jackson County	do	25		
Johnston County	do	5		
Macon County	do			Present.
Madison County	do			Do.
Mecklenburg County (Charlotte included).	Jan. 1-Apr. 30	7		
New Hanover County (Wilmington included).	Jan. 1-Mar. 8	11		
Orange County	Jan. 1-31	10		
Perquimans County	do	32		
Pitt County	do	13		
Richmond County	do	7		
Robeson County	do			Do.
Rockingham County	do	4		
Scotland County	do	20		
Stanly County	do	2		
Union County	do	6		
Vance County	do	12		
Wake County	do	1		
Wayne County	do	10		
Wilkes County	do	20		
Wilson County	do	4		
Yancey County	do	6		
Total for State		483	2	
North Dakota:				
Barnes County	Dec. 1-Apr. 30	19	1	
Cass County	Nov. 1-Apr. 30	16		
Cavalier County	Dec. 1-Apr. 30	18		
Eddy County	Dec. 1-31	1		
Emmons County	Feb. 1-29	2		
Foster County	Apr. 1-30	4		
Grand Forks County	Nov. 1-Dec. 31	12		
Griggs County	Dec. 1-31	1		
McHenry County	Feb. 1-Apr. 30	12	1	
McLean County	Jan. 1-Feb. 29	3		
Ransom County	Nov. 1-Apr. 30	66		
Richland County	Feb. 1-Mar. 31	8		
Rolette County	Nov. 1-Apr. 30	48	1	
Stark County	Feb. 1-Apr. 30	4		
Stutsman County	Dec. 1-Apr. 30	2		
Towner County	Nov. 1-Mar. 31	10		
Trall County	Dec. 1-Apr. 30	13		
Walsh County	Dec. 1-Mar. 31	32		
Ward County	Dec. 1-Apr. 30	26		
Wells County	Nov. 1-Feb. 29	20		
Williams County	Dec. 1-Mar. 31	26		
Total for State		338	3	
Ohio:				
Allen County	Aug. 8-Apr. 9	30		
Ashland County	Jan. 1-Apr. 9	1		
Ashtabula County	Aug. 8-Apr. 9	12		
Athens County	do	112	1	
Auglaize County	do	40	4	
Belmont County	do	25	8	
Butler County	Aug. 8-May 14	30		
Carroll County	Aug. 8-Apr. 9	34		
Champaign County	do	19		
Clark County	Jan. 1-Apr. 9	4		
Clermont County	do	1		
Columbiana County	Aug. 8-Apr. 9	60	1	
Coshocton County	do	66		
Crawford County	Aug. 8-May 28	85		

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

DECEMBER 26, 1903, TO JUNE 24, 1904—Continued.

Place.	Date.	Cases	Deaths	Remarks.
Ohio—Continued.				
Cuyahoga County.....	Aug. 8-May 27.....	54	7	
Darke County.....	Aug. 8-Dec. 26.....	1		
Delaware County.....	do.....	13		
Erie County.....	Aug. 8-Apr. 9.....	17		
Fairfield County.....	do.....	9		
Franklin County.....	do.....	174	5	
Gallia County.....	do.....	74	6	
Greene County.....	Jan. 1-Apr. 9.....	1		
Guernsey County.....	Aug. 8-Apr. 9.....	132	1	
Hamilton County.....	Aug. 8-June 17.....	215	12	
Hancock County.....	Aug. 8-Apr. 9.....	31		
Hardin County.....	Jan. 1-Apr. 9.....	1		
Harrison County.....	Aug. 8-Apr. 9.....	26	4	
Hocking County.....	Jan. 1-Apr. 9.....	31		
Holmes County.....	do.....	44		
Jackson County.....	Aug. 8-Apr. 9.....	31		
Jefferson County.....	do.....	60		
Knox County.....	Aug. 8-Dec. 26.....	1		
Lake County.....	do.....	1		
Lawrence County.....	Aug. 8-Apr. 9.....	242	16	
Licking County.....	do.....	49	1	
Lorain County.....	do.....	4	1	
Lucas County.....	Aug. 8-June 11.....	14		
Madison County.....	Jan. 1-Apr. 9.....	1		
Mahoning County.....	Aug. 8-Apr. 9.....	239	5	
Marion County.....	do.....	258	1	
Miami County.....	do.....	32	2	
Montgomery County.....	Aug. 8-June 18.....	239	19	
Morgan County.....	Jan. 1-Apr. 9.....	2		
Morrow County.....	Aug. 8-Apr. 9.....	9		
Muskingum County.....	Aug. 8-May 7.....	35		
Noble County.....	Jan. 1-Apr. 9.....	4		
Ottawa County.....	Aug. 8-Apr. 9.....	15		
Paulding County.....	Aug. 8-Dec. 26.....	2		
Perry County.....	Aug. 8-Apr. 9.....	71		
Pickaway County.....	Jan. 1-Apr. 9.....	1		
Portage County.....	Aug. 8-Apr. 9.....	6		
Preble County.....	Jan. 1-Apr. 9.....	4		
Putnam County.....	Aug. 8-Apr. 9.....	45		
Richland County.....	do.....	27	1	
Ross County.....	Jan. 1-Apr. 9.....	4		
Scioto County.....	Aug. 8-Apr. 9.....	20		
Seneca County.....	Aug. 8-Dec. 26.....	1		
Stark County.....	Aug. 8-Apr. 9.....	144		
Summit County.....	do.....	41		
Trumbull County.....	do.....	44		
Tuscarawas County.....	do.....	35	1	
Union County.....	do.....	30		
Van Wert County.....	Jan. 1-Apr. 9.....	12	1	
Vinton County.....	Aug. 8-Apr. 9.....	13		
Washington County.....	do.....	76	1	
Wayne County.....	do.....	9		
Williams County.....	Jan. 1-Apr. 9.....	30		
Wood County.....	Aug. 8-Dec. 26.....	31		
Wyandot County.....	Aug. 8-Apr. 9.....	18		
Total for State.....		3,292	97	
Pennsylvania:				
Allegheny County.....	Dec. 18-June 11.....	186	36	Thirteen cases imported at Pittsburg.
Beaver County.....	Dec. 1-Jan. 31.....	5	1	
Berks County.....	Dec. 1-Mar. 4.....	41		
Blair County.....	Dec. 1-June 18.....	26	3	Five cases imported.
Bradford County.....	Dec. 1-Jan. 31.....	10		
Bucks County.....	do.....	4		
Butler County.....	Feb. 1-Apr. 30.....	3		
Cambria County.....	Dec. 1-June 4.....	62	4	Two cases imported.
Clearfield County.....	Dec. 1-Jan. 31.....	20		
Columbia County.....	do.....	8		
Center County.....	do.....	4		
Chester County.....	do.....	1		
Crawford County.....	Apr. 17-30.....	23		
Cumberland County.....	Dec. 1-Jan. 31.....	2		
Dauphin County.....	do.....	2		
Delaware County.....	do.....	8		
Erie County.....	Dec. 1-Apr. 2.....	111	1	
Fayette County.....	Dec. 1-Jan. 31.....	28	1	

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

DECEMBER 26, 1903, TO JUNE 24, 1904—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Pennsylvania—Continued.				
Greene County	Dec. 1-Jan. 31	40		
Indiana County	do	10		
Jefferson County	do	8	3	
Lackawanna County	Dec. 1-Mar. 31	12		
Lancaster County	Dec. 1-Jan. 31	1		
Lebanon County	do	11	1	
Lehigh County	Dec. 1-Apr. 23	120		
Luzerne County	Dec. 1-Jan. 31	4		
Lycoming County	Jan. 3-Apr. 23	16	3	
Monroe County	Dec. 1-Jan. 31	5		
Montgomery County	Dec. 1-May 14	9	1	
Northampton County	Dec. 1-Jan. 31	235		
Northumberland County	do	3		
Perry County	do	1		
Philadelphia County	Dec. 20-June 18	921	225	
Schuylkill County	Dec. 1-Jan. 31	16		
Somerset County	do	9		
Susquehanna County	do	2		
Warren County	Jan. 1-Jan. 31	10	3	
Washington County	Dec. 1-Jan. 31	18		
Wayne County	do	92		
Westmoreland County	do	43		
Total for State		2,130	282	
South Carolina:				
Charleston	Dec. 20-June 4	49	4	Three imported.
Georgetown	Mar. 27	1		
Greenville	Feb. 21-June 4	42		
Total for State		92	4	
Tennessee:				
Memphis	Dec. 13-June 11	433	8	
Nashville	Dec. 27-June 18	156		
Total for State		589	8	
Texas:				
San Antonio	Dec. 1-May 31	66		
Total for State		66		
Utah:				
Ogden	Jan. 1-Mar. 31	3		
Salt Lake City	Dec. 27-May 28	19		
Total for State		22		
Virginia:				
Danville	Feb. 7-13	2		
Pocahontas	Jan. 1-May 31	23	5	
Total for State		25	5	
Washington:				
Adams County	Dec. 1-Apr. 30	6		
Chehalis County	Dec. 1-31	3		
Chelan County	Mar. 1-Apr. 30	9		
Clallam County	Mar. 1-31	1		
Clarke County	Feb. 1-29	1		
Columbia County	Jan. 1-31	1		
Franklin County	Mar. 1-31	1		
Jefferson County (Port Townsend).	Apr. 12	1		
King County (Seattle included).	Dec. 1-Apr. 13	49		
Kittitas County	Dec. 1-31	1		
Klickitat County	Dec. 1-Apr. 30	28		
Lewis County	Feb. 1-29	1		
Lincoln County	Dec. 1-Apr. 30	3		
Mason County	Mar. 1-31	1		
Pacific County	Jan. 1-Feb. 29	2		
Pierce County (Tacoma included).	Feb. 1-June 6	9		
Skagit County	Feb. 1-29	1		
Spokane County (Spokane included.)	Dec. 1-Apr. 30	25	3	
Thurston County	Feb. 1-29	2		

Smallpox in the United States as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

DECEMBER 26, 1903, TO JUNE 24, 1904—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Washington—Continued.				
Wallawalla County	Dec. 1-Jan. 31	9 .....	.....
Whatcom County	Dec. 1-Feb. 29	18 .....	.....
Whitman County	Dec. 1-Mar. 31	4 .....	.....
Yakima County	Jan. 1-Apr. 30	10 .....	.....
Total for State		186	3	
West Virginia:				
Martinsburg	Apr. 4-May 13	20	1	
Total for State		20	1	
Wisconsin:				
Milwaukee	Dec. 13-June 11	206 .....	.....
Total for State		206 .....	.....
Grand total		11,867	512	

FOREIGN AND INSULAR.

During the year ended June 30, 1904, smallpox was reported in 39 countries and islands outside of the United States, as may be seen in the two tables given below—one for each half year. The deaths from smallpox amount to 5,266, of which 4,452 occurred in nine countries as follows: Brazil, 1,525; Turkey, 892; India, 580; Russia, 436; France, 320; Mexico, 229; Great Britain, 185; Belgium, 147, and Spain, 138.

It is interesting to note that only one of these countries, Brazil, reported as many deaths from smallpox as the United States, namely, 1,525, as compared with 1,118.

Smallpox as reported to the Surgeon-General, Public Health and Marine-Hospital Service.

JUNE 27, 1903, TO DECEMBER 25, 1903.

[Reports received by the Surgeon-General, Public Health and Marine-Hospital Service, from United States consuls through the Department of State and from other sources.]

Place.	Date.	Cases.	Deaths.	Remarks.
Argentina:				
Buenos Ayres	May 1-Sept. 30 .....	.....	47	
Austria-Hungary:				
Prague	May 31-Nov. 28	114 .....	.....
Belgium:				
Antwerp .....	.....do	83	14	
Brussels	June 6-Nov. 14 .....	.....	44	
Ghent	May 16-July 4 .....	.....	7	
Liege	May 23-Sept. 5	8	8	
Brazil:				
Pernambuco	June 8-Oct. 31 .....	.....	123	
Rio de Janeiro	May 17-Nov. 15 .....	.....	425	
British Guiana:				
Demerara	Aug. 29-Sept. 26	613	4	Feb. 10-Sept. 26, 1,475 cases, 6 deaths.
Canada:				
British Columbia, Vancouver	Aug. 1-Aug. 31	1 .....	.....
Cape Breton, Sydney	Oct. 8	11 .....	.....
Manitoba, Winnipeg	July 12-Nov. 14	2 .....	.....
New Brunswick, Lansdowne	Aug. 28	6 .....	.....	Imported.
Ontario	May 1-Oct. 31	114	3	
Quebec	Sept. 24-Oct. 3	1 .....	.....
Canary Islands:				
Las Palmas	May 16-June 18	46 .....	.....

Smallpox as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Chile:				
Antofagasta	May 1-Oct. 31		96	
China:				
Hongkong	May 2-Oct. 3	16	5	
Shanghai	May 9-Aug. 15		6	
Colombia:				
Barranquilla	Aug. 10-Nov. 29		15	
Bocas del Toro	June 9-Sept. 15	65	11	
Costa Rica:				
Limon	Sept. 3-Sept. 17	2	1	
Siquires	Sept. 9	1		On ss. Altal, from Savanilla.
Cuba:				
Habana	Sept. 30	1		On a steamer from Trujillo Honduras.
Ecuador:				
Guayaquil	July 5-Nov. 28		5	
Formosa	Apr. 1-Aug. 31	8		
France:				
Lyon	Nov. 15-Nov. 21		1	
Marseille	May 1-Nov. 30		127	
Paris	Aug. 2-Nov. 28	25	15	
Rouen	Aug. 1-Oct. 31		8	
Germany:				
Bremen	Aug. 1	1	1	On ss. Bremen.
Kehl	May 1-May 31	13		
Great Britain and Ireland:				
Birmingham	June 6-Dec. 5	60	2	
Bradford	June 6-Oct. 24	172	9	
Bristol	June 6-Oct. 3	3		
Cardiff	May 2-June 6	28		
Dublin	June 6-Sept. 5	46	8	
Dundee	June 6-Sept. 12	15		
Edinburgh	July 4-July 11	1		
Glasgow	Sept. 19-Dec. 4	99	10	
Leeds	June 6-Oct. 24	145	5	
Leith	Oct. 4-Oct. 10	1		
Liverpool	June 6-Oct. 24	204	25	
London	June 14-Nov. 28	188		
Manchester	June 6-Nov. 28	75	6	
Newcastle on Tyne .....	.....do	111	8	
Nottingham	May 23-Nov. 28	32	1	
Sheffield	May 31-Oct. 24	15		
Southampton	June 14-Dec. 5	2		
South Shields	Aug. 9-Oct. 24	4		From ss. St. Paul from New York.
Sunderland	June 6-Aug. 15	1	1	
West Hartlepool	June 14-Aug. 22	5		
Greece:				
Athens	Oct. 4-Oct. 10	1		
Hawaiian Islands:				
Honolulu	Sept. 1-Sept. 30	3	2	
India:				
Bombay	May 19-Nov. 24		194	
Calcutta	May 3-Sept. 12		13	
Karachi	May 25-June 7	4		
Madras	May 23-June 19		2	
Italy:				
Catania	Aug. 21-Dec. 3		17	
Milan	June 1-June 30	1		
Palermo	Oct. 18-Nov. 21	3		
Rome	May 24-May 30		1	
Japan:				
Kobe	May 23-June 30	5	1	
Nagasaki	June 11-June 20	1		
Yokohama	Jan. 1-Sept. 19	2		
Java:				
Batavia	Sept. 28-Nov. 7	98	27	
Malta	Oct. 4-Nov. 14	10	2	
Mauritius, Port Louis	Oct. 4			Present.
Mexico:				
Coatzacoalcas	June 20-June 27	1		
Merida	Oct. 11-Oct. 24	3		
Mexico	June 7-Nov. 29	161	101	
Monclova	Dec. 10	1		
Tampico	July 12-Nov. 23		4	
Veracruz	July 11-Sept. 5	5	2	One case from vessel from Tampico.
Netherlands:				
Amsterdam	July 25-Nov. 14	23	3	
Philippine Islands:				
Cebu	Aug. 1-Sept. 30	13	5	
Manila	Apr. 11-Oct. 24	77	19	

Smallpox as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

JUNE 27, 1903, TO DECEMBER 25, 1903—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Porto Rico:				
San Juan	Sept. 9-Oct. 31	4	.....
Russia:				
Moscow	May 23-Nov. 21	63	37	
Odesa	July 26-Nov. 21	30	3	
Riga	Apr. 1-June 30 .....	.....	65	
St. Petersburg	May 31-Nov. 21	552	31	
Warsaw	May 16-Nov. 21 .....	.....	48	
Spain:				
Barcelona	July 22-Nov. 7 .....	.....	25	
Cadiz	May 1-May 31	1	.....	On board ss. Grangeworth.
Corunna	Nov. 22-Nov. 28 .....	.....	1	
Straits Settlements:				
Singapore	July 12-Aug. 22 .....	.....	2	
Switzerland:				
Geneva	Aug. 16-Aug. 22	1	.....
Zurich	June 6-June 13	1	.....
Turkey:				
Constantinople	June 14-Nov. 29 .....	.....	134	
Smyrna	May 25-Nov. 22 .....	.....	606	
Uruguay:				
Montevideo	June 1-Sept. 5	14	.....
Venezuela:				
Barquisimeto	June 1-July 31 .....	.....	.....	Present.
Bolivar	Oct. 5 .....	.....	.....	Do.
Caracas	Aug. 28 .....	.....	.....	Smallpox prevalent.
El Coro	Aug. 10 .....	.....	.....	Present.
San Felipe	Oct. 14 .....	.....	.....	Do.
La Pascua	Aug. 1 .....	.....	.....	Do.
Maturin	Aug. 17 .....	.....	.....	Do.
Puerto Cabello	Aug. 28 .....	.....	.....	Smallpox prevalent.
Quibor	June 1-July 31 .....	.....	.....	Present.
Tocuyo	Oct. 16 .....	.....	.....	Smallpox prevalent.
Yaritagua	Sept. 22 .....	.....	.....	Do.

DECEMBER 26, 1903, TO JUNE 24, 1904.

Africa:				
Cape Town	Dec. 1-Mar. 15	6	.....
Green and Sea Point	Nov. 29-Dec. 5	1	.....
Argentina:				
Buenos Ayres	Oct. 1-Mar. 31 .....	.....	239	
Austria-Hungary:				
Prague	Nov. 29-May 28	195	1	
Trieste	Nov. 22-Mar. 5	8	.....
Belgium:				
Antwerp	Jan. 11-May 14	165	68	
Brussels	Jan. 31-May 14 .....	.....	9	
Liege	Jan. 10-Mar. 19	2	2	
Brazil:				
Bahia	Feb. 13-Apr. 23 .....	.....	10	
Campaninas	Feb. 16-Apr. 17	4	.....
Pernambuco	Nov. 1-Apr. 15 .....	.....	269	
Rio de Janeiro	Nov. 16-May 1	1,124	698	
British Guiana:				
Demerara	Nov. 1-Dec. 26	73	.....
Canada:				
British Columbia (Tower Hill and Vancouver)	Dec. 1-May 31	22	1	
Manitoba (Winnipeg)	Mar. 27-June 4	11	.....
New Brunswick (McAdam, Newcastle)	Jan. 9-21	2	.....
Nova Scotia (Sydney)	Apr. 10-May 21	73	1	
Ontario	Dec. 1-Jan. 31	116	.....
Quebec	Feb. 7-Mar. 19	14	.....
Chile:				
Antofagasta	Nov. 1-Dec. 31 .....	.....	13	
Santiago	Feb. 1 .....	.....	.....	Epidemic.
China:				
Hongkong	Dec. 27-Mar. 26	9	4	
Shanghai	Nov. 15-May 7 .....	.....	167	One case on ss. Shimosa from Yokohama.
Tientsin	Jan. 31-Feb. 6	1	.....
Colombia:				
Barranquilla	Dec. 1-May 28 .....	.....	22	
Cuba:				
Habana	June 5	1	.....	On ss. La Navarre from St. Nazaire.

Smallpox as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

DECEMBER 26, 1903, TO JUNE 24, 1904—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Formosa	Jan. 1-Mar. 31	16	.....
France:				
Lyon	Feb. 7-May 14 .....	.....	5	
Marseille	Dec. 1-Apr. 30 .....	.....	108	
Nantes	Jan. 1-31	2	.....
Paris	Nov. 29-June 4	472	56	
Rhelms	Feb. 8-May 1	1	1	
Rouen	Feb. 1-29 .....	.....	4	
Germany:				
Bremen	Apr. 23-29	4	.....	On ss. Wittkind.
Strasbourg	Jan. 1-Dec. 31 .....	.....	2	
Gibraltar	May 23-29	1	.....
Great Britain:				
Birmingham	Dec. 6-June 4	9	1	
Bradford	Nov. 22-June 4	17	.....
Bristol	May 8-June 4	8	.....
Cardiff	Mar. 13-May 21	7	1	
Dundee	Mar. 18-June 4	9	.....
Edinburgh	Dec. 13-June 4	139	11	
Glasgow	Dec. 5-June 10	867	63	
Hull	Jan. 17-June 4	63	2	
Leeds	Dec. 27-May 21	26	.....
Leith	Jan. 10-May 14	26	2	
Liverpool	Dec. 18-June 4	16	.....	Three cases 1 death from ss. Indore from Baltimore.
London	Nov. 29-June 4	298	3	
Manchester	Mar. 27-June 4	64	6	
Newcastle on Tyne	Dec. 5-June 4	142	4	
Nottingham	Nov. 29-June 4	217	10	
Sheffield	Dec. 27-May 21	37	1	
Southampton	Dec. 27-Apr. 9	7	1	
South Shields	Jan. 3-May 21	58	2	
Sunderland	Jan. 3-Feb. 6	17	2	
Hawaii:				
Honolulu	Feb. 4	1	.....	From U. S. s. t. Logan.
India:				
Bombay	Nov. 25-May 24 .....	.....	320	
Calcutta	Dec. 27-May 21 .....	.....	25	
Karachi	Dec. 21-May 22	118	26	
Italy:				
Catania	Dec. 4-May 12 .....	.....	8	
Leghorn	Apr. 11-17	1	.....
Messina	Dec. 12-18 .....	.....	1	
Milan	Jan. 1-Feb. 29	5	.....
Palermo	Jan. 10-May 14	9	.....
Japan:				
Amakusa	Feb. 23	15	.....
Kobe	To May 9	3	.....
Matsu Island	Feb. 15	3	.....	From Ger. ss. Batavia from Vladivostok.
Mogi	Apr. 9 .....	.....	.....	Present.
Fukuoka Ken	To May 9	45	.....
Nagasaki Ken	Feb. 11-May 20	576	99	One case from Br. ss. Kwang Ping from Tsin-hwan-tao.
Sasebo	Apr. 9 .....	.....	.....	Present.
Yokohama	Jan. 1-Dec. 31, 1903	2	.....
Do	Feb. 1-27	3	.....
Java:				
Batavia	Nov. 15-Apr. 23	174	42	
Malta	Dec. 6-Apr. 2	25	5	
Mexico:				
La Cananea	Mar. 9 .....	.....	.....	Do.
Magdalena	do	8	.....
Mexico	Dec. 23-June 5	118	67	
Porfirio Diaz	Jan. 9	1	.....
Tampico	Jan. 11-May 14 .....	.....	15	
Torreon	Feb. 24-May 23	144	38	
Veracruz	Dec. 19-June 4	8	2	One case ss. Prince August Wilhelm from Havre. One case imported.
Netherlands:				
Amsterdam	Dec. 20-May 21	40	8	
Rotterdam	Dec. 6-May 28	16	1	
Panama, Panama	Jan. 11-June 5 .....	.....	3	
Philippine Islands:				
Cebu	Jan. 1-Mar. 31	6	2	
Manila	Nov. 15-May 7	31	14	
Porto Rico:				
San Juan	Dec. 1-Mar. 8	9	.....

Smallpox as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

DECEMBER 28, 1903, TO JUNE 24, 1904—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Russia:				
Moscow	Nov. 22-May 28 ..	148	62	
Odessa.....	Nov. 29-May 28 ..	82	6	
St. Petersburg	do	407	73	
Warsaw	Nov. 8-May 7		101	
Spain:				
Barcelona	Jan. 10-May 20		97	
Madrid	To Dec. 15	35,000		Estimated.
Batander	Dec. 9-Apr. 4	51	15	
Straits Settlements:				
Singapore	Feb. 21-Apr. 16		3	
Turkey:				
Alexandretta	Mar. 6-May 21 ...	17	2	
Beirut	Apr. 5-30			A few cases.
Constantinople	Jan. 18-May 29		99	
Smyrna	Nov. 23-May 1		51	
Uruguay:				
Montevideo	Sept. 6-Feb. 29 ...	12	3	

Respectfully submitted.

GEORGE TULLY VAUGHAN,
Assistant Surgeon-General.

To the SURGEON-GENERAL.

Smallpox as reported to the Surgeon-General, Public Health and Marine-Hospital Service—Continued.

DECEMBER 26, 1908, TO JUNE 24, 1904—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Formosa.....	Jan. 1-Mar. 31....	16	.....
France:				
Lyon.....	Feb. 7-May 14....	.....	5	
Marseille.....	Dec. 1-Apr. 30....	.....	108	
Nantes.....	Jan. 1-31.....	2	.....
Paris.....	Nov. 29-June 4....	472	56	
Rheims.....	Feb. 8-May 1.....	1	1	
Rouen.....	Feb. 1-29.....	.....	4	
Germany:				
Bremen.....	Apr. 23-29.....	4	.....	On ss. Wittkind.
Strasbourg.....	Jan. 1-Dec. 31....	.....	2	
Gibraltar.....	May 23-29.....	1	.....
Great Britain:				
Birmingham.....	Dec. 6-June 4....	9	1	
Bradford.....	Nov. 22-June 4....	17	.....
Bristol.....	May 8-June 4....	8	.....
Cardiff.....	Mar. 13-May 21....	7	1	
Dundee.....	Mar. 13-June 4....	9	.....
Edinburgh.....	Dec. 13-June 4....	139	11	
Glasgow.....	Dec. 5-June 10....	887	63	
Hull.....	Jan. 17-June 4....	63	2	
Leeds.....	Dec. 27-May 21....	26	.....
Leith.....	Jan. 10-May 14....	26	2	
Liverpool.....	Dec. 13-June 4....	16	1	Three cases 1 death from ss. Indore from Baltimore.
London.....	Nov. 29-June 4....	298	3	
Manchester.....	Mar. 27-June 4....	64	6	
Newcastle on Tyne.....	Dec. 5-June 4....	142	4	
Nottingham.....	Nov. 29-June 4....	217	10	
Sheffield.....	Dec. 27-May 21....	37	1	
Southampton.....	Dec. 27-Apr. 9....	7	1	
South Shields.....	Jan. 8-May 21....	58	2	
Sunderland.....	Jan. 8-Feb. 6....	17	2	
Hawaii:				
Honolulu.....	Feb. 4.....	1	.....	From U. S. a. t. Logan.
India:				
Bombay.....	Nov. 25-May 24....	.....	320	
Calcutta.....	Dec. 27-May 21....	.....	25	
Karachi.....	Dec. 21-May 22....	118	26	
Italy:				
Catania.....	Dec. 4-May 12....	.....	8	
Leghorn.....	Apr. 11-17.....	1	.....
Messina.....	Dec. 12-18.....	.....	1	
Milan.....	Jan. 1-Feb. 29....	5	.....
Palermo.....	Jan. 10-May 14....	9	.....
Japan:				
Amakusa.....	Feb. 23.....	15	.....
Kobe.....	Apr. 3-16.....	3	.....
Matsu Island.....	Feb. 15.....	3	.....	From Ger. ss. Batavia from Vladivostok.
Mogi.....	Apr. 9.....	.....	.....	Present.
Fukuoka Ken.....	To May 9.....	45	.....
Nagasaki Ken.....	Feb. 11-May 20....	576	99	One case from Br. ss. Kwang Ping from Tsin-hwan-tao.
Sasebo.....	Apr. 9.....	.....	.....	Present.
Yokohama.....	Jan. 1-Dec. 31, 1903	2	.....
Do.....	Feb. 1-27.....	3	.....
Java:				
Batavia.....	Nov. 15-Apr. 23....	174	42	
Malta.....	Dec. 6-Apr. 2.....	25	5	
Mexico:				
La Cananea.....	Mar. 9.....	.....	.....	Do.
Magdalena.....	do.....	8	.....
Mexico.....	Dec. 28-June 5....	118	67	
Porfirio Diaz.....	Jan. 9.....	1	.....
Tampico.....	Jan. 11-May 14....	.....	15	
Torreón.....	Feb. 24-May 28....	144	38	
Veracruz.....	Dec. 19-June 4....	8	2	One case ss. Prince August Wilhelm from Havre. One case imported.
Netherlands:				
Amsterdam.....	Dec. 20-May 21....	40	8	
Rotterdam.....	Dec. 6-May 28....	16	1	
Panama, Panama.....	Jan. 11-June 5....	.....	3	
Philippine Islands:				
Cebu.....	Jan. 1-Mar. 31....	6	2	
Manila.....	Nov. 15-May 7....	31	14	
Porto Rico:				
San Juan.....	Dec. 1-Mar. 8.....	9	.....

DECEMBER 26, 1903, TO JUNE 24, 1904—Continued.

Place.	Date.	Cases.	Deaths.	Remarks.
Russia:				
Moscow	Nov. 22-May 28 ..	148	62	
Odessa	Nov. 29-May 28 ..	32	6	
St. Petersburg	do	407	73	
Warsaw	Nov. 8-May 7		101	
Spain:				
Barcelona	Jan. 10-May 20			
Madrid	To Dec. 15	35,000	97	Estimated.
Santander	Dec. 9-Apr. 4	51	15	
Straits Settlements:				
Singapore	Feb. 21-Apr. 16		3	
Turkey:				
Alexandretta	Mar. 6-May 21 ...	17	2	A few cases.
Beirut	Apr. 5-30			
Constantinople	Jan. 18-May 29		99	
Smyrna	Nov. 23-May 1		51	
Uruguay:				
Montevideo	Sept. 6-Feb. 29 ...	12	3	

Respectfully submitted.

To the SURGEON-GENERAL.

GEORGE TULLY VAUGHAN,
Assistant Surgeon-General.

**DIVISION OF FOREIGN AND INSULAR
QUARANTINE.**

(EMBRACING MEDICAL INSPECTION OF IMMIGRANTS.)

REPORT OF THE DIVISION OF FOREIGN AND INSULAR QUARANTINE (EMBRACING MEDICAL INSPECTION OF IMMIGRANTS).

By W. J. PETTUS,

Assistant Surgeon General, Public Health and Marine-Hospital Service, in charge.

SIR: I have the honor to submit the following report of the transactions of the division of foreign and insular quarantine and immigration for the fiscal year ended June 30, 1904:

CUBA.

NO YELLOW FEVER.

As during the preceding year, not a single case of yellow fever has been reported as originating on the island during the fiscal year, though eight cases were removed from vessels coming from Mexican and South American ports, and sent to Las Animas hospital for treatment.

PERSONAL HEALTH CERTIFICATES TO BE GIVEN AT HABANA ONLY ON REQUEST OF STEAMSHIP COMPANY.

Referring to the correspondence between this Bureau and Acting Assistant Surgeon Echemendia at Habana, Cuba, relative to the issuance of health certificates to passengers from ports infected with yellow fever via Cuban ports to Gulf ports of the United States, in Public Health Report of April 29, 1904, page 798, it was found to be very detrimental to the interests of the steamship lines plying between Habana and the Gulf ports, since passengers for other southern ports were not required to have these certificates. For these reasons, and on account of the very excellent Cuban quarantine regulations, explained in the correspondence above referred to, the following telegram was sent to the medical officer at Habana:

WASHINGTON, May 21, 1904.

Acting Asst. Surg. D. M. ECHEMENDIA,
Habana, Cuba:

Cease giving personal health certificates, unless specially requested, for each individual case by steamship company.

WYMAN.

HABANA.

REPORT OF ACTING ASST. SURG. D. M. ECHEMENDIA, IN TEMPORARY CHARGE.

**PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
*Habana, Cuba, July 11, 1904.***

SIR: I have the honor to submit the following report of the transactions at this port for the fiscal year ended June 30, 1904:

The work of the Service continues under the same rules as last year, and it has been conducted without any variation, except that the certificates and inspection of

the baggage for Florida were discontinued, and no restriction whatever remains for the traffic between ports of Cuba and those of the United States, only the inspection of vessels, passengers, and crew.

Asst. Surg. F. E. Trotter, who was in temporary command since the past year, was relieved on the 2d of January by Passed Asst. Surg. Joseph B. Greene, who was in charge twenty-three days only, as he had to leave on account of his ill health, and I have been in temporary charge ever since.

The steamship *Senator*, which was recently repaired, is now in good condition to do service in the harbor for some years, but she is not in condition for sea voyages.

On the 1st of February the Cuban quarantine service was transferred from the department of government to the department of finance.

The quarantine service of Cuba was originally placed under the department of finance by General Wood by military order No. 122, dated April 2, 1902. A few weeks after the withdrawal of the American force from Cuba the quarantine service was taken from the department of finance and placed under the department of government and the service merged into the superior sanitary board as a dependent. The affairs of quarantine continued to be administered through the chief sanitary officer, Dr. Charles J. Finlay, until the 1st of February, when the Cuban Congress placed an amendment to the appropriation bill, declaring that the military order No. 122 was still in force, and returned the quarantine service to the department of finance, thereby making it independent of the superior sanitary board.

The service is now reorganized, with Dr. Hugo Roberts as chief quarantine officer of the island of Cuba. He has been quarantine officer since August, having filled his position very satisfactorily.

Dr. Felix Giralt, who was previously acting assistant surgeon in the United States Public Health and Marine-Hospital Service, is now local chief quarantine officer of this port, having been appointed by General Wood ever since the beginning of the organization. He is considered thoroughly reliable in the fulfillment of his duties, and adheres to the rules of the United States Public Health and Marine-Hospital Service, being very strict and energetic. He is assisted by Doctors Milanés, Domínguez, and Ponce de León, officers who have been in the Service for some time and have given proof of their efficiency.

Our relations with the Cuban quarantine officers are of the most cordial nature; they give us information on anything pertaining to sanitary matters.

I inclose herewith list of vessels arrived at quarantine with yellow fever on board, together with the mortuary report and report of vessels inspected.

Respectfully,

D. M. ECHENMENDIA,
Acting Assistant Surgeon in temporary charge.

The SURGEON-GENERAL.

[Inclosures.]

VESSELS ARRIVED WITH QUARANTINABLE DISEASE ON BOARD AND THOSE DISINFECTED BY THE SERVICE.

July 3, 1903.—American steamship *Matanzas* from Tampico arrived on June 30 with 1 case of yellow fever, which was transferred by the Cuban authorities to Las Animas Hospital. Case recovered.

July 13, 1903.—American steamship *Vigilancia* from Progreso arrived the 7th and 1 passenger was landed as immune. Case developed at home and was taken by the Cuban authorities to Las Animas Hospital. Case ended fatally.

August 5, 1903.—American steamship *Vigilancia* from Veracruz to New York. One passenger in transit sent to Las Animas Hospital as suspicious. Temperature, 39° C.

August 11, 1903.—Norwegian bark *Endymion* arrived at Caibarien, Cuba, from South Africa the 3d of August, with foul bill of health and was remanded to Habana for disinfection, and was disinfected by request of the chief quarantine officer of Cuba.

August 11, 1903.—American steamship *Monterey* from Veracruz and Progreso landed a second-class passenger with yellow fever.

August 14, 1903.—Norwegian steamship *Nord*, bound for Galveston, was disinfected upon request of agents, Messrs. Silveira & Co.

October 6, 1903.—American steamship *Monterey* arrived from Progreso; had a case of yellow fever which was transferred to Las Animas Hospital.

October 9, 1903.—German steamship *Prince Albert* from Veracruz. Two of crew were sent to Las Animas Hospital, diagnosed by the commission as yellow fever.

November 9, 1903.—Cuban steamship *Paloma*, from Guanta, Venezuela, entered port with 1 of the crew ill with yellow fever. Man removed to Las Animas Hospital, where he died shortly after entrance.

April 4, 1904.—British steamship *Wildcroft* arrived at the port of Sagua, Cuba, with a man of the crew ill with a light attack of yellow fever. The *Wildcroft* arrived at this port on the 9th and was kept at quarantine.

May 17, 1904.—American steamship *Monterey* arrived from Mexico; had a cabin passenger in transit to New York ill, who was transferred to Las Animas Hospital as suspicious of yellow fever.

May 30, 1904.—American steamship *Vigilancia* arrived from Veracruz with a passenger suspicious of yellow fever, who was taken by the Cuban authorities to Las Animas Hospital; was found by the commission not to be yellow fever.

June 5, 1904.—French steamship *La Navarre* arrived the 5th instant from St. Nazaire; was developed 1 case of smallpox in one of the passengers in transit to Mexico. The case was removed to Las Animas Hospital, and the steamer and baggage disinfected by the Cuban authorities. All the passengers were revaccinated and sent to Mariel. The steamship cleared for Mexico.

June 13, 1904.—American steamship *Monterey* arrived from Progreso; had 4 non-immune passengers with high fever of suspicious nature. They were taken by the Cuban authorities to Las Animas Hospital, where it was found by the commission to be malarial fever.

Annual report of transactions at Habana, Cuba, for year ended June 30, 1904.

Steamers:	
Inspected and passed	944
Disinfected	1
Sailing vessels:	
Inspected and passed	256
Disinfected	1
Number of crews:	
Steamers	48, 156
Sailing vessels	2, 225
Number of passengers:	
Steamers	27, 741
Sailing vessels	68

MATANZAS.

REPORT FROM ACTING ASST. SURG. E. F. NUÑEZ.

**PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Matanzas, Cuba, July 8, 1904.**

SIR: I have the honor to submit herewith an annual report of the transactions at this port for the fiscal year ended June 30, 1904.

In carrying out the various operations of this office I have endeavored to follow out a line of conduct based upon a strict observance of the quarantine regulations of the United States. Where a vessel has left for a port in the United States direct, the sanitary condition of the ship, cargo, crew, and passengers have been carefully ascertained from personal inspection on board, before the bill of health was granted, noting the abnormal conditions observed, if any, under the heading of "Remarks." In the case of a vessel leaving for the United States or its possessions, via foreign ports, the bill of health was issued at the office, after being assured by the ship's master or its chief officer that the sanitary condition aboard was satisfactory. When, on the other hand, a vessel in quarantine was about to leave without completing the period of detention, a careful inspection was invariably made, prior to granting the bill of health, whether the vessel cleared for the United States direct or via foreign ports.

No quarantinable disease has appeared on board of any vessel entering this harbor or within this district throughout the year just ended.

So far the necessity of disinfection of vessels bound for the United States has not arisen, inasmuch as Cuba has continued free from epidemics of quarantinable diseases, and vessels bound for the United States, originally from infected ports other than those with yellow fever, have been carefully disinfected on entering this port and before taking on their cargoes, as required by the Cuban quarantine regulations.

The quarantine service as conducted by the Cuban authorities at this port so far has been efficient. Any suggestions that I have deemed proper to make in behalf

of the Cuban service have been welcomed and courteously accepted and carried out by its officer, Dr. Felix Garcia. This service still retains the same officer and employees trained during the American intervention. It may be said that in some respects the Cuban quarantine service is carried out to the extreme, differing from the usual proceedings of our service, as drawn from scientific experience and observation, as in the following instance: When a vessel originally from a port infected or suspicious of being infected with yellow fever arrives at a Cuban port it is held in quarantine indefinitely, irrespective of the time elapsed since leaving the infected port, so long as it is not disinfected. The period of detention formerly was but five days from the time of arrival, and free pratique was granted at the expiration of such time if no quarantinable disease had appeared on board. Fortunately, the vessel so detained is allowed to carry out its operations of unloading and taking on cargo, provided the stevedores from shore, helping in the work, are provided with certificates of immunity to yellow fever issued by the Cuban quarantine officer.

A quarantine by Cuba in reference to yellow fever has been in force against Mexico, the Central American Republics, Colombia, and Venezuela uninterruptedly through the whole year, and it is likely to be so maintained indefinitely until yellow fever ceases to be endemic in those countries.

The good sanitary work in the city under the charge of its competent and efficient health officer, Dr. Alberto Schweyer, is bound to experience a change for the worse in the near future.

The annual appropriation funds of \$36,000, which was hitherto allowed by the treasury department of the Republic to defray the expenses of this particular service in this city, has been totally withdrawn since July 1 of the present year. The municipal council, having made no provision in its annual budget for the important service of public hygiene, simply through carelessness, has placed the health officer in very embarrassing circumstances to solve the conflict in a satisfactory manner. The municipal council, after holding several meetings and deliberating at length on the new situation, in view of the lack of available funds to continue on the work and as a last resource passed the following resolution, which has since been carried into effect, viz, to reduce the personnel belonging to the sanitary department and the pay of those remaining in so much as to bring down the total expenditure to \$18,000 a year. The reduction has been carried to such an extent that in my opinion it has rendered the service extremely deficient. Not less than 42 men, about two-thirds of the total force, which was barely sufficient before to do the work properly, has been discharged, including the mosquito brigades, the force in charge of the daily irrigations of the streets, and that devoted to the house-to-house inspection.

The outcome of all this can readily be foreseen if the existing conditions are not corrected in time.

The mortality of the city of Matanzas during the fiscal year just ended shows an increase of 28 deaths as compared with that of the previous year. It will be noticed from the comparative statistics hereby submitted that the mortality since January, 1904, is still considerably greater, as compared with the corresponding months in 1903.

The statistics of contagious and infectious diseases reported during the year are also submitted.

The following is a summary of the transactions of this office for the period covered by this report:

Bills of health issued	259
Crew of vessels	7,730
Passengers	989
Vessels disinfected	0
Total number of deaths	776
Annual rate of mortality	16.16
Estimated population	48,000

Summary of contagious and infectious diseases reported during the year.

	Cases.
Typhoid fever	27
Diphtheria	21
Scarlet fever	14
Dysentery	1
Leprosy	4
Varicella	3
Measles	2
Rötheln	1

My relations with the Cuban authorities have been cordially maintained; every courtesy has been shown, and facilities offered me for the operations of this office.

Respectfully,

E. F. NUÑEZ,
Acting Assistant Surgeon.

NUEVITAS.

REPORT OF ACTING ASST. SURG. E. F. McCONNELL.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Nuevitas, Cuba, July 24, 1904.

SIR: I have the honor to make the following report of the transactions of this station for the fiscal year ended June 30, 1904:

No cases of quarantinable diseases have been reported. All vessels leaving this port for ports in the United States have been boarded and crews and passengers inspected. Baggage going on board vessels bound to ports on the Gulf has been disinfected. I inclose reports of bills of health issued, crews and passengers examined.

Annual report of transactions at Nuevitas, Cuba, for the year ended June 30, 1904.

Steamers inspected and passed	66
Sailing vessels inspected and passed	31
Crew on steamers	3, 110
Crew on sailing vessels	282
Passengers on steamers	574

Respectfully submitted.

E. F. McCONNELL,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

SANTIAGO.

REPORT OF ACTING ASST. SURG. RICHARD WILSON.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Santiago de Cuba, July 28, 1904.

SIR: I have the honor to make the following report for the fiscal year 1903-4:

Bills of health issued	201
Crews inspected	7, 597
Passengers inspected	3, 217

The main trouble with the sanitary department has been the lack of funds. Formerly the city used to receive from the insular government \$3,000 a month for sanitary purposes; this paid for the personnel and the material. February 1, 1904, this was discontinued in spite of the energetic protest of the local authorities. Since this time the city has had a hard struggle to clean the streets, remove the garbage, and attend to other sanitary matters. Although the city property is taxed 10 per cent of its estimated net income (which is the limit the law allows) the city is not able to pay all its expenses, and, as sanitation had not been provided for in the estimate for the fiscal year just finished, it had to readjust its other expenses, cutting them down as much as possible, also taking all unexpended balances remaining from other appropriations. But all this was not sufficient. For economy's sake the number of employees of the sanitary department was reduced on one or two occasions, but in spite of all the city can not raise the money to pay them. The city now owes the sanitary department and the police the wages for May and June and July up to date. This was the cause of a strike of the sanitary department the beginning of this month, which was settled through the intervention of the alcalde and a small payment on account.

As a matter of economy the city has now only 30 street sweepers and 15 drivers for the garbage carts, a number insufficient for its needs.

Condition of the city.—Comparing the condition of the city with what it was a year ago, it is certainly worse, that is, the streets are dirtier and in a worse condition. The garbage is not removed as regularly or as often as it ought to be, etc. The city authorities have done the best they can, but they have not sufficient funds, so the work has almost stopped. This change has been gradual.

For want of money the streets are not kept in repair, and, with a few exceptions (principally the asphalted streets), they are in very bad condition, some of them with holes that make them dangerous.

Mosquito brigade.—The mosquito brigade, which, in my last yearly report, I reported had been organized, was very short lived. Early in August, 1903, it was abolished for lack of funds.

Contagious diseases.—In spite of all these conditions and of partial neglect through lack of funds and reduced personnel, the city has remained healthy and free from epidemic diseases.

The only contagious diseases reported have been diphtheria, varicella, and measles. The number of each of these reported has seldom exceeded 3 a month, and some months there have been none.

There is a medical board whose duty it is to examine every case of contagious disease reported and confirm or correct the diagnosis.

The city just now is worse off for water than it was last year, for the storm of June 13 burst the aqueduct near the dam, and it was repaired "temporarily" by inserting a piece of pipe of much smaller diameter. While this was going on the city was without water for three days. As we are in the rainy season, there is now plenty of water, but if this is not properly fixed before next winter we will certainly suffer from want of water.

HÆMOGLOBINURIC FEVER AT DAQUIRI.

On September 3, 1903, I reported the existence of numerous cases of hæmoglobinuric fever occurring at Daiquiri, a mining town about 15 miles to the east (see Public Health Reports, Vol. XVIII, No. 38, p. 1565). The report of these cases reached the press of the United States and the newspapers published a series of sensational and alarming articles, which were very annoying to people living here or interested in this end of the island. The Cuban health authorities sent Dr. John Guiteras to Daiquiri to investigate. His report was accepted, that there was no epidemic or contagious disease—only a severe form of malaria. This quieted public fears, and the mining company, under the advice of the health authorities, took some precautions to try and prevent the continuance of this fever, the principal one being the emptying of a lagoon by means of a steam pump.

MORTALITY STATISTICS.

The total number of deaths in Santiago de Cuba for the fiscal year 1903-4 was 907; besides this there were 103 stillbirths, making a total of 1,010.

Respectfully,

RICHARD WILSON,
Acting Assistant Surgeon, in charge.

The SURGEON-GENERAL.

[Inclosures.]

Summary of work at Santiago de Cuba for the fiscal year 1903-4.

	1903.						1904.					
	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.
Bills of health issued	16	19	13	17	18	13	17	18	19	19	18	14
Crews	527	680	454	724	589	407	861	778	845	647	626	469
Passengers	102	243	227	194	269	64	623	461	364	147	309	214
Deaths from yellow fever	0	0	0	0	0	0	0	0	0	0	0	0
Deaths from other contagious diseases	0	0	0	0	1	0	1	0	0	0	0	0
Deaths from all causes (stillbirths not counted)	112	65	60	74	65	79	48	63	70	71	88	112
Cases of quarantinable diseases reported in city	0	0	0	0	0	0	0	0	1	0	0	0
Cases of other contagious diseases reported in city	12	9	2	0	2	3	6	10	4	7	1	0
Certificates issued for shipping remains of dead bodies to the United States	0	0	0	0	0	0	0	1	0	0	1	0

^a Leprosy.

^b Diphtheria.

^c Measles, 7; diphtheria, 2.

^d Measles, 2.

^e Measles, 1; diphtheria, 1; varicella, 3; an-thrax, 1.

^f Diphtheria, 2; varicella, 8.

^g Measles, 1; diphtheria, 2; varicella, 1.

^h Measles, 4; diphtheria, 3.

ⁱ Varicella, 1.

Summary of work at Santiago de Cuba for the fiscal year 1903-4—Continued.

	1903.		1904.		1903.	1904.	Total fiscal year.
	Third quarter.	Fourth quarter.	First quarter.	Second quarter.	Second semester.	First semester.	
Bills of health issued.....	48	48	54	51	96	106	201
Crews.....	1,661	1,720	2,484	1,732	3,341	4,216	7,597
Passengers.....	572	527	1,448	670	1,099	2,118	3,217
Deaths from yellow fever.....	0	0	0	0	0	0	0
Deaths from other contagious diseases.....	0	1	1	0	1	1	2
Deaths from all causes (stillbirths not counted).....	237	218	181	271	456	452	907
Cases of quarantinable diseases reported in city.....	0	0	1	0	0	1	1
Cases of other contagious diseases reported in city.....	13	5	20	8	18	28	46
Certificates issued for shipping remains of dead bodies to the United States.....	0	0	1	1	0	2	2

Summary of mortality statistics, Santiago de Cuba, fiscal year 1903-4.

(Bertillon classification. Estimated population, 45,500.)

	1903.						1904.					
	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.
I. General diseases:												
Intermittent fever and malarial cachexia.....	8	11	13	8	3	7	2	6	8	13	9	7
Tuberculous diseases.....	16	7	8	13	12	22	14	16	12	8	13	4
Other general diseases.....	3	1	5	3	6	5	6	6	9	7	4	7
Group total.....	27	19	26	24	21	34	22	28	29	28	26	21
II. Diseases of the nervous system and organs of special sense:												
Tetanus (infantile).....	2	1	1	1	3	2	4	0	1	4	3	3
Tetanus (traumatic).....	2	0	0	0	0	2	0	0	1	0	1	0
Total tetanus.....	4	1	1	1	3	4	4	0	2	4	4	3
Other diseases of the nervous system, etc.....	8	6	4	5	6	6	2	4	4	7	6	10
Group total.....	12	7	5	6	9	10	6	2	6	11	10	13
III. Diseases of the circulatory system:												
Organic diseases of the heart.....	5	5	5	5	5	6	4	5	6	3	7	6
Other diseases of the circulatory system.....	4	4	0	1	1	2	4	1	1	2	4	2
Group total.....	9	9	5	6	6	8	8	6	7	5	11	8
IV. Diseases of the respiratory system:												
Pneumonia.....	3	1	0	3	3	3	3	2	5	1	4	2
Other diseases of the respiratory system.....	3	2	4	2	6	1	1	3	0	4	4	4
Group total.....	6	3	4	5	9	4	4	5	5	5	8	6
V. Diseases of the digestive system:												
Diarrhea and enteritis (under 2 years).....	34	9	3	4	1	6	4	3	4	1	12	33
Diarrhea and enteritis (chronic).....	4	4	0	1	2	3	1	3	1	2	3	1
Diarrhea and enteritis (2 years and over).....	3	2	0	0	1	0	1	1	0	1	3	2
Total diarrhea and enteritis.....	41	15	3	5	4	9	6	7	5	4	18	36
Diseases of the liver.....	0	2	4	3	1	1	0	2	3	3	0	2
Other diseases of the digestive system.....	3	2	1	3	4	1	1	1	3	3	3	4
Group total.....	44	19	8	11	9	11	7	10	11	10	21	42
VI. Diseases of the genito-urinary apparatus and its adnexa:												
Bright's disease.....	1	1	2	2	1	2	2	0	2	1	2	0
Other diseases of this group.....	2	0	1	2	2	1	0	0	0	0	0	2
Group total.....	3	1	3	4	3	3	2	0	2	1	2	2

Summary of mortality statistics, Santiago de Cuba, fiscal year 1903-4—Continued.

	1903.						1904.					
	July.	August.	September.	October.	November.	December.	January.	February.	March.	April.	May.	June.
VII. The puerperal state:												
Puerperal septicaemia.....	0	1	0	0	0	0	0	0	2	0	0	0
Other diseases.....	0	0	0	1	0	0	0	1	0	0	0	0
Group total.....	0	1	0	1	0	0	0	1	2	0	0	0
VIII. Diseases of the skin and cellular tissue (group total).....	1	0	0	0	0	2	0	0	0	1	0	1
IX. Diseases of organs of locomotion (group total).....	0	0	0	1	0	0	0	0	0	0	0	0
X. Malformations: Congenital, still births not included (group total).....	0	1	0	1	0	0	0	1	0	1	0	2
XI. Early infancy:												
Congenital debility.....	0	1	2	1	2	2	0	3	1	3	2	2
Other diseases.....	0	0	0	2	1	0	0	1	2	0	1	0
Group total.....	0	1	2	3	3	2	0	4	3	3	3	2
XII. Old age: Senile debility (group total).....	0	0	2	1	2	2	1	0	0	2	0	0
XIII. Affections produced by external causes:												
Suicides.....	1	0	0	0	0	0	0	0	0	0	0	0
Accidents.....	2	2	0	1	0	1	0	0	1	0	4	8
Group total.....	3	2	0	1	0	1	0	0	1	0	4	8
XIV. Ill-defined diseases:												
Autopsied.....	5	2	5	10	3	2	0	2	4	3	2	7
Other ill-defined or unspecified causes of death.....	2	0	0	0	0	0	0	2	0	1	1	1
Group total.....	7	2	5	10	3	2	0	4	4	4	3	8
Total deaths by months.....	112	65	60	74	65	79	48	63	70	71	88	112
Still births reported.....	9	9	10	11	5	6	10	8	17	4	8	6
Total number of deaths.....	121	74	70	85	70	85	58	71	87	75	96	118

	1903.		1904.		1903.	1904.	Total fiscal year.
	Third quarter.	Fourth quarter.	First quarter.	Second quarter.	Second semester.	First semester.	
I. General diseases:							
Intermittent fever and malarial cachexia.....	32	18	16	29	50	45	95
Tuberculous diseases.....	31	47	42	28	78	70	148
Other general diseases.....	9	14	21	18	23	39	62
Group total.....	72	79	79	75	151	154	305
II. Diseases of the nervous system and organs of special sense:							
Tetanus (infantile).....	4	6	5	10	10	15	25
Tetanus (traumatic).....	2	2	1	1	4	2	6
Total tetanus.....	6	8	6	11	14	17	31
Other diseases of the nervous system, etc.,.....	18	17	8	23	35	31	66
Group total.....	24	25	14	34	49	48	97
III. Diseases of the circulatory system:							
Organic diseases of the heart.....	15	16	15	16	31	31	62
Other diseases of the circulatory system.....	8	4	6	8	12	14	26
Group total.....	23	20	21	24	43	45	88
IV. Diseases of the respiratory system:							
Pneumonia.....	4	9	10	7	13	17	30
Other diseases of the respiratory system.....	9	9	4	12	17	11	28
Group total.....	13	18	14	19	30	28	58

Summary of mortality statistics, Santiago de Cuba, fiscal year 1903-4—Continued.

	1903.		1904.		1903.	1904.	Total fiscal year.
	Third quarter.	Fourth quarter.	First quarter.	Second quarter.	Second semester.	First semester.	
V. Diseases of the digestive system:							
Diarrhea and enteritis (under 2 years)....	46	11	11	46	57	57	114
Diarrhea and enteritis (chronic).....	8	6	5	6	14	11	25
Diarrhea and enteritis (2 years and over)...	5	1	2	6	6	8	14
Total diarrhea and enteritis.....	61	18	18	58	77	76	153
Diseases of the liver.....	6	5	5	5	11	10	21
Other diseases of the digestive system....	6	8	5	10	14	15	29
Group total.....	73	31	28	73	102	101	203
VI. Diseases of the genito-urinary apparatus and its adnexa:							
Bright's disease.....	4	5	4	3	9	7	16
Other diseases of this group.....	3	5	0	2	8	2	10
Group total.....	7	10	4	5	17	9	26
VII. The puerperal state:							
Puerperal septicæmia.....	1	0	2	0	1	2	3
Other diseases.....	0	1	1	0	1	1	2
Group total.....	1	1	3	0	2	3	5
VIII. Diseases of the skin and cellular tissue (group total).....	1	2	0	2	3	2	5
IX. Diseases of organs of locomotion (group total).....	0	1	0	0	1	0	1
X. Malformations: Congenital, still births not included (group total).....	1	1	1	3	2	4	6
XI. Early infancy:							
Congenital debility.....	3	5	4	7	8	11	19
Other diseases.....	0	3	3	1	3	4	7
Group total.....	3	8	7	8	11	15	26
XII. Old age: Senile debility (group total).....	2	5	1	2	7	3	10
XIII. Affections produced by external causes:							
Suicides.....	1	0	0	0	1	0	1
Accidents.....	4	2	1	12	6	13	19
Group total.....	5	2	1	12	7	13	20
XIV. Ill-defined diseases:							
Autopsied.....	12	15	6	12	27	18	45
Other ill-defined or unspecified causes of death.....	2	0	2	3	2	5	7
Group total.....	14	15	8	15	29	23	52
Total deaths by months.....	237	218	181	271	455	452	907
Still births reported.....	28	22	35	18	50	53	103
Total number of death.....	265	240	216	289	505	505	1,010

CIENFUEGOS.

REPORT BY ACTING ASST. SURG. R. L. McMAHON.

CIENFUEGOS, CUBA, July 1, 1904.

SIR: I have the honor to make the following annual report of the transactions at this station for the fiscal year ended June 30, 1904:

Statement of the office transactions and inspection service.

Bills of health.....	192
Vessels inspected.....	192
Members of crews inspected.....	5,815
Passengers inspected.....	375
Vessels disinfected.....	13

All bills of health issued at this port during this year were clean.

No quarantinable disease appeared among either crews or passengers.

Only water ballast has been taken from this port during this year.

Instructions were received at this office by circular letter from the Bureau dated March 2, 1904, to act the same for vessels sailing for the ports of the Republic of Panama as for ports in the United States.

SANITATION.

There has been no improvement made in this city during the past year regarding the matter of bettering the sanitary condition of the city, and the same conditions exist now as were reported July 1, 1903. The water supply of the city is worse now than it was a year ago on account of worse condition of the river from where it is obtained, and also on account of no improvement having been made in the plant in the city.

The city still remains without a sewerage system, and no prospects of any improvement in this line soon.

Mosquitoes of all varieties abound in great numbers in all parts of the city, and no effort has been made looking to their destruction. It is worthy of note that mosquitoes are to be generally found quite numerous aboard of all vessels that lie in this harbor, even if the vessel is anchored 2 or 3 miles from the shore.

The sanitary condition of the city at present is very bad in many sections, and no doubt the great increase of sickness in the city is due to this and the bad water.

The inspection service by the Cuban quarantine officials has been done efficiently, and no sickness of a quarantinable nature has been allowed to enter the city during this year.

Strict quarantine is maintained against all Mexican and Central American ports.

During this year steamers have been calling at this port from Buenos Ayres, Montevideo, and Para once a month. They usually bring a cargo of jerked beef, and this is discharged while the ship is held in quarantine.

ALIENS.

During this year three aliens have been examined and passed for the United States; two in the month of July, 1903; one in June, 1904. Total number of deaths for the fiscal year, 823. Estimated population, 30,080.

Respectfully,

R. L. McMAHON, *Acting Assistant Surgeon.*

The SURGEON-GENERAL.

PORTO RICO.

During the fiscal year ending June 30, 1904, the sanitary conditions in Porto Rico have been very satisfactory, Passed Asst. Surg. W. W. King still being on duty as chief quarantine officer at San Juan, with Pedro del Valle Atilles as assistant.

TITLE TO MIRAFLORES ISLAND.

The Attorney-General of the United States has declared that, in his opinion, the United States now possesses a valid and complete title to the whole of this island. During the year Congress made an appropriation of \$23,500 for improvements to the quarantine station on the island.

OBSERVATIONS ON LEPROSY IN PORTO RICO.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
San Juan, P. R., November 2, 1903.

SIR: As a matter of probable interest to the Bureau, I have the honor to submit the following data concerning leprosy in the island of Porto Rico, the probable number of cases existent at present, their segregation and treatment, as observed by me upon the occasion of a visit to the leper colony on the 28th ultimo, and subsequent

discussion of the matter with Dr. R. Hernandez, president of the superior board of health of Porto Rico, and others.

Although during the Spanish Government there was a compulsory law in Porto Rico regulating the isolation in the suburbs of San Juan of all lepers on the island, such law was not enforced in all cases. Official and other influences made the law applicable only to the poorer classes, while it was avoidable by others. Practically there was not isolation in the true sense of the word, because the colony of lepers was situated in the environs of San Juan, where many poor people lived in small wooden houses and huts.

The building in which the lepers were confined consisted of a one-story wood construction placed to the south of the city jail, and surrounded by the above-mentioned houses and huts. The medical attendance was intrusted to one of the municipal physicians.

After the American occupation of Porto Rico and during the period the island was under military government, the lepers were conveyed to "Isla de Cabras," the old Spanish quarantine station, a full description of which has been given in one of Surg. A. H. Glennan's reports to the Bureau in 1899.

The island is situated at the entrance of San Juan Harbor, between the Morro Castle fortifications on the east and the village of Palo Seco on the south. The location of the island is an ideal one for the purpose, the prevailing winds being east and southeast.

The leper colony is actually under the control of the board of charities and, to some extent, the superior board of health.

I am indebted to Dr. F. R. Goenaga, superintendent of the insane asylum and acting director of the board of charities, for affording me the opportunity of visiting the colony. The recently-appointed director of the board of charities, Mr. Haesselbarth, together with Dr. Quevedo Baez, the physician in charge of the colony, and myself left San Juan in a sailboat on the afternoon of the 28th ultimo, and after a pleasant trip of about one hour arrived at Cabras Island where we were met by the steward of the colony and invited to make an inspection of the grounds and buildings. The first building visited was a wooden construction in which the steward and other employees are quartered. This is situated on the east side of the island and was found to be in a cleanly and well ventilated condition.

We next visited the male lepers' quarters, a solid brick construction with a wide veranda extending all around. This building was formerly used as a detention building when the island was used as a quarantine station. There are four rooms, divided by a central hall, with accommodations for some sixteen or twenty patients. Actually, there are 10 lepers in this building.

The next building we visited, separated from the first by about 800 meters, was found to be occupied by the female lepers, 7 in number. This building, similar to the barracks occupied by the male lepers, was used during Spanish quarantine times as a lazaretto. Between this and the male ward or barracks is located the nurse's room, and adjacent to this the kitchen and dispensary and also the general store-room. The kitchen is a very small room containing a charcoal stove of brick, the provisions being kept in wooden boxes. These provisions consist chiefly of Irish potatoes, rice, beans, ham, bacon, etc.

The duties of the steward of the colony are to live on the island, fill all prescriptions of the physician in charge, and to oversee all the work of the employees. The physician pays a visit to the colony three times a week.

The total number of lepers on the island is 17, and it is supposed that these are the only confirmed cases of leprosy in the island of Porto Rico. At least this is the opinion of the president of the superior board of health, Dr. R. Hernandez, with whom I had the honor to talk this matter over. Doctor Hernandez suspects, however, that there may be some six or seven cases concealed in the mountainous districts of the island.

The cases of leprosy that I saw on Cabras Island may be classified as follows: Among the males there are 9 of the typical nodular form and 1 anæsthetic; among the women there are 5 nodular and 2 anæsthetic. Two of these patients have developed tuberculosis of the lungs and are in a pitiable condition.

All inmates of the colony are now well cared for, their meals consisting in coffee, milk, bread, fresh beef, beans, peas, rice, etc.

Though the fresh water-supply is very poor, the patients are kept in a fairly clean condition.

As a matter of curiosity, I should like to invite attention here to the fact that only one of the seventeen lepers seen confess to have acquired the disease from another person affected with it. All of the others say they never have seen a case before,

and, while some of them ascribe the cause of their illness to bathing in salt, muddy sea water, others claim that they got the disease from bathing in cold water, their bodies at the time being too warm.

Respectfully,

PEDRO DEL VALLE ATILLES,
Acting Assistant Surgeon.

To the SURGEON-GENERAL.

SAN JUAN, P. R., November 4, 1903.

Respectfully forwarded,

W. W. KING,
Assistant Surgeon, Chief Quarantine Officer for Porto Rico.

SAN JUAN AND SUBPORTS.

REPORT OF PASSED ASST. SURG. W. W. KING, CHIEF QUARANTINE OFFICER.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND.
San Juan, P. R., July 2, 1904.

SIR: As directed by Bureau circular letter of March 18, I have the honor to make the following report of the transactions at this station during the fiscal year ended June 30, 1904:

In quarantine.—There has been no change in the equipment of the station during the fiscal year. The same methods of procedure and regulations as those previously enforced have been continued during the present year. Owing to the difficulty in determining the amount of yellow fever existing in Venezuela and the South American countries, vessels from these ports are on arrival held in quarantine, business being transacted under guard. This quarantine affects two steamship lines, the American "Red D" line, touching here biweekly, and the Spanish Transatlantic line, touching monthly. Occasionally some tramp vessel arrives from those ports and is subjected to the same treatment. As this class of vessels is possibly infested by *stegomyia* mosquitoes, the passengers are held under observation for a period of five days after arrival, unless they show satisfactory evidence of immunity to yellow fever.

To stop the practice of small sailing vessels from St. Thomas and other near-by ports touching at Culebra to land cargo and passengers without quarantine and immigration inspection, an arrangement was made with the naval officer in command of Culebra Station that he should remand all such vessels to Fajardo for inspection before allowing them to land at Culebra.

At the request of the commandant of the naval station, 1,382 pieces of dunnage and bedding of the crew of the U. S. training ship *Monongahela* were disinfected during an epidemic of diphtheria on board.

During the year no vessel has arrived at any Porto Rican port with quarantinable disease on board. No case of yellow fever has been known on the island. From reports received from the board of health, 72 cases of smallpox, with 1 death, have occurred in Porto Rico.

Out quarantine.—With the exception that vaccination certificates are viséed for passengers for Cuba, there has been practically no outgoing quarantine.

Personnel.—The following changes have occurred among the officers of the Service in Porto Rico. At the beginning of the fiscal year Passed Asst. Surg. L. L. Lumsden was in temporary command during the absence on leave of Asst. Surg. W. W. King, who reassumed charge on August 10, 1903. Again Passed Asst. Surg. Taliaferro Clark was in temporary command from March 1 to April 1, 1904, during the absence on special temporary duty of Assistant Surgeon King. Pharmacist B. E. Holsendorf relieved Pharmacist F. J. Herty at San Juan on March 20, 1904. Acting Asst. Surg. James W. Brice relieved Acting Asst. Surg. Pablo Font y Martelo at Humacao on April 1, 1904.

Nothing of special interest has occurred at any of the subports, which are only inspection stations. The boat house at Humacao was completed shortly after the beginning of the fiscal year. Tabulated statements are inclosed showing the inspection of immigrants and quarantine transactions at San Juan and the six subports.

Respectfully,

W. W. KING,
Passed Assistant Surgeon, Chief Quarantine Officer for Porto Rico.

The SURGEON-GENERAL.

[Inclosures.]

Summary of transaction at the United States quarantine station, San Juan, P. R., during the fiscal year ended June 30, 1904:

Vessels inspected.....	241
Vessels held in quarantine.....	42
Vessels disinfected.....	0
Bills of health issued to outgoing vessels.....	330
Crew of vessels inspected.....	19,521
Passengers, local, inspected.....	2,014
Passengers, in transit, inspected.....	8,372
Passengers detained for observation.....	59
Pieces of baggage and dunnage ^a disinfected.....	1,382

SUPPORTS.

[Mayaguez, P. R. Acting Asst. Surg. Rafael U. Lange Miranda, in charge of station.]

Vessels inspected.....	92
Bills of health issued.....	160
Crew of vessels inspected.....	5,358
Passengers inspected.....	2,734
Vessels held in quarantine.....	7
Pieces of baggage disinfected.....	0

[Arecibo, P. R. Acting Asst. Surg. M. Martínez Rossello, in charge of station.]

Vessels inspected.....	29
Bills of health issued.....	53
Crew of vessels inspected.....	973
Passengers inspected.....	83
Vessels held in quarantine.....	8
Pieces of baggage disinfected.....	0

[Humacao, P. R. Acting Asst. Surg. James W. Brice, in charge of station.]

Vessels inspected.....	34
Bills of health issued.....	35
Crew of vessels inspected.....	422
Passengers inspected.....	12
Vessels held in quarantine.....	0
Pieces of baggage disinfected.....	0

[Aguadilla. Acting Asst. Surg. Julian Benejam, in charge of station.]

Vessels inspected.....	31
Bills of health issued.....	32
Crew of vessels inspected.....	1,588
Passengers inspected.....	389
Vessels held in quarantine.....	6
Pieces of baggage disinfected.....	0

[Arroyo, P. R. Acting Asst. Surg. Juan Trujillo Piza, in charge of station.]

Vessels inspected.....	11
Bills of health issued.....	8
Crew of vessels inspected.....	260
Passengers inspected.....	2
Vessels held in quarantine.....	0
Pieces of baggage disinfected.....	0

[Fajardo, P. R. Acting Asst. Surg. Esteban Lopez, in charge of station.]

Vessels inspected.....	32
Bills of health issued.....	33
Crew of vessels inspected.....	181
Passengers inspected.....	22
Vessels held in quarantine.....	0
Pieces of baggage disinfected.....	0

^aThe dunnage was disinfected for diphtheria, which was prevalent among the apprentice boys aboard of the U. S. training ship *Monongahela*, at the request of the commandant of the naval station at this port.

PONCE.

REPORT FROM PONCE, BY ACTING ASST. SURG. JULIO FERRER TORRES.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Ponce, P. R., July 6, 1904.

SIR: I have the honor to forward the following report of the quarantine transactions at this station for the fiscal year ended June 30, 1904:

Vessels inspected	172
Vessels in quarantine	46
Vessels disinfected	0
Crew inspected	8, 101
Passengers for Ponce inspected	626
Passengers in transit inspected	4, 489
Pieces of baggage disinfected	54
Bills of health issued	239

During the year no vessels arrived with quarantinable disease on board. Vessels from suspicious ports of Central and South America have been held in quarantine, but were not disinfected, as they remained in port only a few hours, transacting business under guard and only such communication with the shore allowed as was necessary and not considered dangerous.

Nonimmune passengers from suspicious or infected ports were detained on the barge *Argus*. Baggage of these ports was also duly disinfected on the barge.

Bills of health were issued to all vessels sailing for American ports and to other ports when application was made for them.

Weekly sanitary reports were made of the sanitary condition, mortality, etc., of this district.

Very respectfully,

JULIO FERRER TORRES,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

OFFICE OF CHIEF QUARANTINE OFFICER,
San Juan, P. R., July 7, 1904.

Respectfully forwarded to the Surgeon-General, United States Public Health and Marine-Hospital Service, Washington, D. C.

PEDRO DEL VALLE ATILES,
Acting Assistant Surgeon, in temporary charge.

MEXICO.

SEASON OF 1903.

The following-named medical officers on duty at the end of the fiscal year ended June 30, 1903, were continued on duty at their respective ports until the end of the close quarantine season: Asst. Surg. Joseph Goldberger, at Veracruz; Acting Asst. Surg. John Frick, at Tampico, and Acting Asst. Surg. J. F. Harrison, at Progreso.

VERACRUZ.

REPORT OF TRANSACTIONS AT VERACRUZ, MEXICO, BY PASSED ASST. SURG. L. L. LUMSDEN.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Veracruz, Mexico, July 5, 1904.

SIR: I have the honor to submit, in compliance with Bureau letter of June 23, the following report of transactions of the Service at the port of Veracruz from

July 1 to December 31, 1903, the same being compiled from the records of the station:

Steamers inspected and passed.....	141
Steamer disinfected.....	1
Sailing vessels inspected and passed.....	8
Sailing vessels disinfected.....	0
Crew on steamers.....	6, 336
Crew on sailing vessels.....	57
Passengers on steamers.....	3, 101
Passenger on sailing vessel.....	1

During the period covered by this report 2 vessels destined for United States ports had quarantinable disease (yellow fever) on board while at Veracruz. They were the British S. S. *Cayo Largo* from Habana via Tampico, with 1 case of yellow fever on board upon arrival here, July 23, 1903, and the British S. S. *Kasala*, which vessel, after having been at this port for eleven days, was found, when inspected, September 22, to have 1 case of yellow fever among the members of the crew. Both vessels, in part, were fumigated with sulphur dioxide by the Mexican quarantine officials after the cases of fever had been taken ashore.

Respectfully,

L. L. LUMSDEN, *Passed Assistant Surgeon.*

The SURGEON-GENERAL.

TAMPICO.

REPORT BY ACTING ASST. SURG. F. B. LIPPINCOTT.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE, OFFICE OF MEDICAL OFFICER IN COMMAND, *Tampico, Mexico, January 5, 1904.*

SIR: I have the honor to report the following transactions at this station up to December 31, 1903:

Bills of health issued.....	13
Vessels inspected and passed.....	10
Vessels disinfected and passed.....	3
Personnel of crew.....	437
Passengers.....	11
Baggage (pieces).....	15

There were 23 deaths from all causes, of which 1 was from tuberculosis, 1 from tetanus, 1 from cachexia palustre, and 20 from noncontagious causes.

The port, as well as the surrounding country, is at present free from all contagious diseases.

Respectfully,

F. B. LIPPINCOTT,
Temporary Acting Assistant Surgeon.

The SURGEON-GENERAL.

PROGRESO.

REPORT BY ACTING ASST. SURG. J. F. HARRISON.

Report of transactions at Progreso, Mexico, for the four months ended November 1, 1903.

Steamers inspected and passed.....	67
Steamers disinfected.....	0
Sailing vessels inspected and passed.....	10
Sailing vessels disinfected.....	0
Crew on steamers.....	2, 694
Crew on sailing vessels.....	72
Passengers on steamers.....	1, 138
Passengers on sailing vessels.....	0

Respectfully,

J. F. HARRISON,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

SEASON OF 1904.

Soon after the close of the active quarantine season of 1903 the services of the medical officers on duty at Veracruz, Tampico, and Progreso, Mexico, were discontinued.

Immediately before the close quarantine season for the present year the following-named medical officers were assigned to duty at those ports: Passed Asst. Surg. L. L. Lumsden, in the office of the United States consul at Veracruz; Asst. Surgs. T. B. McClintic and Joseph Goldberger, in the office of the United States consul at Tampico, and Acting Asst. Surg. J. F. Harrison, in the office of the United States consul at Progreso.

The agreement of the previous season with the various steamship companies running ships regularly between these ports and the Gulf and southern ports of the United States for the fumigation of their vessels at the port of departure was renewed, the agents or owners of the vessels to furnish the appliances and materials for this fumigation to destroy any mosquitoes that may have come on board the vessels. After this fumigation, which was to take place under the supervision of the medical officer immediately before the sailing of the vessel, a certificate setting forth the facts was given to the vessel, which would prevent the five-day detention, upon arrival at the port in the United States, imposed by the quarantine laws, as the number of days consumed in the voyage could be subtracted from this period of detention.

In February, 1904, upon request of the health officers of certain Southern States, Surg. C. P. Wertenbaker, of the Service, was detailed to accompany these health officers on a tour of sanitary observation through Mexico. They visited Mexico City, Veracruz, Tampico, Victoria, and Monterey, and were everywhere treated with the utmost courtesy and consideration by the Mexican authorities. The visit of the Surgeon-General to the City of Mexico early in January and the cooperative measures agreed upon with the Mexican health authorities are mentioned elsewhere (see pages 291 et seq.).

VERACRUZ.

REPORT BY PASSED ASST. SURG. L. L. LUMSDEN.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Veracruz, Mexico, July 18, 1904.

SIR: I have the honor to transmit herewith a tabulated statement of transactions at this station during April, May, and June of the fiscal year ended June 30, 1904.

Bills of health were issued to 84 vessels, having a total of 3,422 crew and carrying 1,978 passengers. Included in this number are 3 steamers—with 96 crew and 2 passengers—which cleared for Colon, Republic of Panama.

INSPECTION.

All vessels granted bills of health were inspected. Inspections were made invariably by daylight and as late as practicable before departure of vessels. As the port was considered infected with quarantinable disease (yellow fever) continually during the three months, especial care was taken in making the inspection to determine that all passengers and members of crews were free of symptoms of quarantinable disease at time of inspection. On board vessels bound directly for southern ports in the United States and for ports in the Republic of Panama temperatures of all persons were taken.

DISINFECTION.

Two vessels were disinfected because there had been yellow fever on board. These were the American steamers *Vigilancia* and *Havana*, arriving here June 17 and June 25, respectively, each of them with a case of yellow fever among the passengers taken on at Progreso. The local quarantine officials took the cases of fever ashore and fumigated the vessels in part. After cargoes had been discharged the entire vessels were fumigated under my supervision, with the object of destroying all mosquitoes possibly on board before the vessels were cleared for a United States port (New York).

Fifteen vessels bound for ports on the Gulf coast of the United States were fumigated with sulphur dioxide, in order to kill mosquitoes, and furnished certificates. The method of fumigating these vessels was as follows: The vessel, after having cleared from the port, was anchored in the outer part of the harbor as far as practicable—200 meters at least—from other vessels and the shore. All compartments of the vessel were then simultaneously subjected for two hours to the fumes generated by the burning of 2 pounds of sulphur to each 1,000 cubic feet of space to be disinfected. The vessel was required to depart immediately upon the completion of fumigation.

So far as this office is aware, none of the vessels fumigated here have had cases of yellow fever develop on board while en route to or while undergoing quarantine detention at port of arrival in the United States. Thus the benefits of this disinfection at port of departure have been, from a sanitary standpoint, the protection of passengers and crew from exposure to possible infection en route, and, from a commercial standpoint, the shortening of the period of detention of vessels in quarantine at port of arrival by the amount of time consumed on the voyage, on an average about four days.

Report of transactions at Veracruz, Mexico, for last quarter of fiscal year ending June 30, 1904.

	April.	May.	June.	Total.
Steamers inspected and passed	35	22	21	78
Steamers disinfected	3	5	8	16
Sailing vessels inspected and passed	2	4	0	6
Sailing vessels disinfected	0	1	0	1
Crew on steamers	1,400	957	1,008	3,364
Crew on sailing vessels	14	34	0	48
Passengers on steamers	690	757	541	1,978
Passengers on sailing vessels	0	0	0	0

SANITARY CONDITION OF THE PORT.

During the three months under consideration the quarantinable diseases reported in the city of Veracruz were as follows: Yellow fever, 17 cases with 4 deaths; smallpox, 3 cases and 1 death. Three of the cases of yellow fever were infected at outside points—1 at Boca del Rio and 2 at Merida—and were ill when they arrived here. These figures show a marked improvement in the yellow-fever situation for the present year as compared with the corresponding three months of 1903, during which period there were 183 cases with 61 deaths. In fact, the number of deaths reported to have been caused by yellow fever during this quarter of 1904 is less than that recorded for the corresponding quarter of any other year since 1898.

The number of deaths recorded in the city of Veracruz from all causes during the thirteen weeks ending June 25, 1904, was 441—an annual death rate of 54.27 per 1,000. For the corresponding thirteen weeks ending June 27, 1903, the total number of deaths was 564—an annual death rate of 69.38 per 1,000. The rates for both years are based on an estimated population of 32,500. Of the deaths recorded for the thirteen weeks ending June 27, 1903, 59 were reported to have been caused by malarial fevers (including "fiebre perniciosa"), while of those recorded for the corresponding thirteen weeks ending June 25, 1904, only 39 were reported to have been caused by malarial fevers, a decrease of 20. This consideration of the mortuary records shows that the lowered death rate for the last quarter of the fiscal year ending June 30, 1904, as compared with the same quarter of 1903, may be explained to a large extent

by the decrease in the number of deaths from the two mosquito-borne diseases—yellow fever and malaria.

The improvement in the yellow-fever situation for the present year may be entirely, and probably is to some extent, the result of the campaign against this disease which has been carried on by the sanitary officials since September 1, 1903. The general plan of this campaign has been to promptly discover all cases of yellow fever and place them in the screened rooms or wards of the city hospitals, to disinfect all infected houses, and to prevent the breeding of mosquitoes by oiling or covering water receptacles. However perfect the plan of the sanitary campaign may have been, the execution of certain of its details has been, as would be expected by anyone familiar with conditions in Veracruz, far from perfect; therefore I think it safe to conclude that causes other than sanitary measures must have contributed somewhat to bringing about the improvement in the situation. One fact to be considered in this connection is that during April, May, and June of 1903 about 3,000 laborers were brought from the interior country districts to Veracruz for work on the city's public buildings and sewerage system, while for the corresponding three months of the present year no extensive public works were going on and probably not more than 500 or 600 such laborers were in Veracruz. A large proportion of these laborers are nonimmune, and when large numbers of them are in Veracruz there is generally a marked increase in the number of cases of yellow fever. For instance, during the three months ending June 30, 1900, when extensive work on the harbor improvements was being carried on, there were recorded 77 deaths from yellow fever, while for the corresponding period of the following year (1901) there were recorded only 6 deaths from that disease. The sanitary measures carried out during these two years were, so far as I am aware, practically identical; so the difference in the number of cases for the two periods considered could hardly have been due to sanitary efforts, but must be explained by a difference in the number of nonimmune residents, and perhaps also to a change in some (as yet not understood) natural conditions which influence the prevalence of yellow fever.

The laying of the mains for a good water and sewerage system was completed in March of this year, but as yet, largely on account of the exorbitant prices charged for piping, only a few house connections have been made with the mains. When these new water and sewerage systems have been extended to all houses, of rich and poor alike, in the city, when the old cesspools and mosquito breeding water barrels and cisterns have been done away with, and when a campaign against yellow fever, thorough in design and in execution, has been begun Veracruz, so long considered a pest hole, will be well on the way to take her place among those tropical American cities which to-day stand as monuments to the triumphs of modern sanitation.

Respectfully,

L. L. LUMSDEN,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

TAMPICO.

REPORT OF TRANSACTIONS AT TAMPICO, MEXICO, BY ASST. SURG. T. B. MCCLINTIC.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,

OFFICE OF MEDICAL OFFICER IN COMMAND,

Tampico, Mexico, July 5, 1904.

SIR: In accordance with instructions contained in Bureau letter of April 1, detailing me for duty at the port of Tampico, I have the honor to submit herewith report of the transactions at this station for the period from April 1, the date the Service resumed operations here, to June 30, 1904.

The following is a summary, by months, of the transactions during this time:

	April.	May.	June.	Total.
Steamers inspected.....	33	21	29	83
Sailing vessels inspected.....	1	1	1	3
Steamers fumigated and certified.....	10	9	12	31
Sailing vessels fumigated and certified.....	1	0	0	1
Crews on steamers.....	1,077	738	904	2,719
Crews on sailing vessels.....	7	4	8	19
Passengers on steamers.....	48	173	59	280
Passengers on sailing vessels.....	0	0	0	0

As will be observed from the above, 32 vessels were fumigated, and the following shows, by months, the ports for which they were bound :

	April.	May.	June.	Total.
Pensacola.....	8	5	4	17
Mobile.....	0	1	0	1
Norfolk, via New York.....	2	1	3	6
New Orleans.....	1	2	3	6
Galveston.....	0	0	2	2

A new line of steamships between Tampico and Galveston has just been started and has one vessel each week for fumigation. This fumigation is an item of great financial importance to vessels bound from here for a southern port, as their period of detention at the port of destination is reduced by the time in transit about three and one-half days, and the time and cost of fumigation is small.

Tampico being situated on the Panuco River, 7 miles from its mouth, the fumigation is done where it empties into the sea, off La Barra. This practically eliminates the possibility of reinfection with mosquitoes under conditions as they have existed since my arrival here, as the season has been dry and mosquitoes comparatively few.

I do not deem it necessary from a sanitary point of view, but at the request of the masters, to avoid the difficulty of turning the vessels in the river, a large proportion of them are fumigated a mile or more at sea.

After fumigating, the temperatures of all on board are taken, the vessel given a certificate as to what has been done, and allowed to proceed on her voyage.

Respectfully,

T. B. McCLINTIC, *Assistant Surgeon.*

The SURGEON-GENERAL.

PROGRESO.

REPORT OF TRANSACTIONS AT PROGRESO, MEXICO, BY ACTING ASST. SURG. J. F. HARRISON.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Progreso, Mexico, July 1, 1904.

Report of transactions for three months ending July 1, 1904.

Steamers inspected and passed.....	48
Steamers disinfected.....	9
Sailing vessels inspected and passed.....	5
Sailing vessels disinfected.....	4
Crews on steamers.....	1,949
Crews on sailing vessels.....	35
Passengers on steamers.....	1,275
Passengers on sailing vessels.....	None.

Respectfully,

J. F. HARRISON,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

CENTRAL AND SOUTH AMERICA.

FRUIT-PORT INSPECTION SERVICE.

In accordance with the custom of previous years, the work of inspection at the fruit ports of Central and South America was discontinued at the close of the active quarantine season of 1903 and the officers recalled.

At the beginning of the close quarantine season for the present year the following-named officers were ordered to the various ports for the purpose of carrying out the special quarantine regulations for fruit vessels: Acting Asst. Surg. Paul Osterhout, Bocas del Toro, Republic of Panama; Acting Asst. Surg. W. H. Carson, Belize, British Honduras; Acting Asst. Surg. R. H. Peters, Livingston, Guatemala; Acting Asst. Surg. C. S. Carter, Puerto Cortez, Honduras; Acting Asst. Surg. D. W. Goodman, Port Limon, Costa Rica; Acting Asst. Surg. W. B. Robertson, Ceiba, Honduras, and Acting Asst. Surg. W. H. Reilley, Bluefields, Nicaragua.

The following letter of instructions was sent to officers at all fruit ports:

TREASURY DEPARTMENT.
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, March 28, 1904.

SIR: Referring to Bureau letter of March 28, 1904, approved by the Secretary and the President, detailing you for duty in the office of the United States consul at Port Limon, Costa Rica, under the act of February 15, 1893, you are informed that your duties at that port will consist in the enforcement of the United States quarantine laws and regulations for foreign ports, including the inspection of all vessels leaving your port for ports in the United States its dependencies or possessions, either direct or via other ports, and signing, in conjunction with the United States consular officer, the bills of health issued to the same. You will also carry out the special regulations for vessels plying between infected or suspected fruit ports and ports of the United States, its possessions or dependencies. A copy of Department circular No. 25, revised regulations covering same, will be sent for your instruction. You are informed that the Government of the Republic of Panama has requested that vessels leaving your port for ports in Panama be submitted to the same restrictions by yourself as if they were bound for United States ports, and you are directed to comply with this request.

Your attention is especially called to the agency of the *Stegomyia fasciata* mosquito in the conveyance of yellow fever, and you will take all due precautions to prevent vessels leaving your port for United States ports, its possessions or dependencies, from carrying these mosquitoes. The State Department has been requested to inform the consular officer at your port of your detail and to instruct him to transfer to you the public property left in his custody by your predecessor at the close of the last quarantine season. As soon after your arrival as possible you will transmit a list of this property turned over to you by the consular officer to the Bureau for comparison with the list now on file here. Blank forms necessary for your use will be transmitted to you under separate cover; also copy of the United States Quarantine Laws and Regulations.

You will note that the disinfection of baggage and passengers' effects to prevent infection from yellow fever is no longer required.

The supply of blanks transmitted to you consist of, first, an individual certificate to be issued to each passenger about to embark on a fruit vessel bound for United States ports. The other is a certificate to be issued in duplicate to the master of the vessel as an adjunct to the bill of health and duplicate bill of health. The master may deliver the duplicate certificate if requested to the quarantine officer at the port of arrival. One copy of each of these certificates issued by you should be inclosed with the weekly report from your station.

At the close of each week you will transmit a report of condition and transactions at your port on the blank form transmitted.

Should yellow fever break out at your port you will immediately cable to the Bureau particulars of the matter.

You should keep complete records of all transactions, in order that a report of the same may be submitted at the close of the fiscal year ending June 30, 1904.

You are informed that the active quarantine season for the States of Louisiana, Alabama, and Texas will take effect April 1, 1904.

Should yellow fever break out at your port you will take the temperature of all the crew and passengers of vessels leaving for United States ports, and in case any of them show a rise in temperature you will detain them, unless

a positive diagnosis that the case is not yellow fever or any other quarantinable disease can be made.

You should, immediately upon your arrival, ascertain the amount of supplies on hand, so that, if necessary, you can make timely requisition for replenishing the same. An immediate acknowledgement of receipt of this letter is requested, and you will report to the Bureau the date of arrival at your station.

Respectfully,

WALTER WYMAN,
Surgeon-General.

Dr. D. W. GOODMAN.

Acting Assistant Surgeon in Charge.

(Care United States Consulate, Port Limon, Costa Rica.)

PORT LIMON.

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. FLEETWOOD GRUVER, SEASON OF 1903.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE, OFFICE OF MEDICAL OFFICER IN COMMAND, *Port Limon, Costa Rica, November 1, 1903.*

SIR: I have the honor to submit the following report of transactions and conditions at this port for the quarantine season ended October 31, 1903.

Since my arrival here on April 9, 1903, this port has not been free of yellow fever infection. During that time 81 cases have been treated at the several hospitals, with total mortality of 39—over 48 per cent. Among these were 11 Americans and 11 Englishmen, of whom 5 of the former and 3 of the latter died. Of the 81 cases, 10 were female, 7 of whom died. One case of leprosy and 1 case of smallpox were imported into this city. These were reported at the time. Blackwater fever is very common and very fatal; one attack predisposing to another.

The sanitary condition of Limon is very poor. Yellow fever and malaria in its severest types are always present, and but little effort is made by the authorities to improve the condition. Much of the sickness reported from Limon is brought into the city from suburban towns; nearly all which are infected with yellow fever and send their patients to the hospitals here. Two years ago the Costa Rican Congress enacted a law providing for the removal outside of the city limits of all hospitals where contagious and infectious diseases were treated. This law has never been enforced. There is very little doubt that the hospitals are a source of infection and a menace to the health of the city.

During this season yellow fever has appeared in nearly every block in Limon. The cuartel, or jail, furnished 10 cases. The result, however, obtained in this instance by attention to the mosquito theory is significant, as not a case has appeared since the cuartel was made mosquito proof and fumigated.

During the season ending October 31, 1903, I have examined 157 ships and 6,785 passengers and crew, as follows: Crew, 5,731; passengers direct, 535; passengers in transit, 719. I have also fumigated 4 ships.

The health of the passengers on all the steamers examined was satisfactory. A few cases of malarial infection were noted among the crews of several steamers, and in only one instance was it found necessary to remove any member of the crew of a ship before a positive diagnosis could be made. I can say that the enforcement of the regulations adopted by the Treasury Department imposes no hardship on commerce, and in no instance has a delay of any length been occasioned by their thorough observation, including a close examination of passengers and crews.

During the season just closed only one vessel clearing from this port arrived at an United States port with a case of yellow fever. It is a fact, however, worthy of notice that the initial fever occurred fifty-six hours after leaving this port. This vessel had remained in Limon eight days; another vessel which remained here one month developed a case of yellow fever among its crew. These two instances justify me in recommending a removal of restrictions as to night loading, and rather placing a premium on quick dispatch. Many vessels are kept in port longer than would otherwise be necessary by the regulations which establish an hour up to which they are permitted to discharge and load cargo.

It were better to set limits as to the length of time which a vessel may lay at anchor here not working than to enforce a useless delay. If the State boards

of health would adopt the national quarantine regulations every protection would be obtained, and also closer cooperation insured on the part of the shipping public.

Respectfully,

The SURGEON-GENERAL.

FLEETWOOD GRUVER,
Acting Assistant Surgeon.

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. D. W. GOODMAN, SEASON OF 1904.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.
OFFICE OF MEDICAL OFFICER IN COMMAND,
Port Limon, Costa Rica, July 1, 1904.

SIR: I have the honor to submit the following report of the conditions and transactions of this port during the trimester ended June 30, 1904:

Limon is situated on the sea, protected on the east and south by a concrete sea wall. Its northern and portions of its western limits are marked by low, swampy lands. Roughly speaking, the town extends one-half mile from east to west and one-fourth mile from north to south. It has an officially estimated population of nearly 4,000, a large majority being negroes from Jamaica. Many of these live in two or three story tenement houses, thickly congregated; others occupy small cottages, raised only a few inches from the ground. Under some of these houses the surface of the ground has been made or allowed to assume a basin shape, which, being filled by the rains, remains more or less wet and forms good breeding places for mosquitoes.

The water supply is from two sources—one from Banana River, a continuously flowing stream with few habitations near its banks. Its water is generally clear and inviting looking. The reservoir is some 10 miles from Limon on the bank of the river, and the water is conveyed to the town through iron pipes, but not with enough pressure for fire purposes or even for domestic use in houses of more than one story. This supply is limited in amount, and is used only by the larger and newer houses and by those in which water-closets have been placed. The other source of supply is tanks and barrels, in which rain water from the roofs is kept for drinking and domestic purposes.

The sanitary condition of Limon is not good. There is some slight improvement in this respect since 1901, when I was stationed here first. This improvement in the sanitary condition results from the filling in of some swamps in and near the town, incident to the constructing of a railroad by the United Fruit Company.

Mosquitoes, especially anopheles and stegomyia, abound, and show their evil presence by the constant prevalence of acute malarial troubles and regularity of recurrence of yellow fever among the population. Nothing is done to destroy these insects or to prevent their propagation, and but little to bar them from access to patients sick of malarial or yellow fever. This is to be deplored, for by the wise expenditure of a comparatively small sum of money the surface puddles of water could be filled in or kept oiled, the water barrels and tanks covered with wire gauze, and a careful and persistent protection of all fever patients had.

A few inadequate and poorly constructed sewers were laid some years ago, and serve to receive the output from what water-closets and bath tubs are connected therewith, but not always to discharge their contents into the sea, as intended.

Three hospitals—one of the Costa Rican Railroad, one of the United Fruit Company, and the other the Charity—are situated in the town and are by no means modern or sanitary.

A new and large hospital is now being erected about 1 mile north of Limon on the seacoast, and is to be used jointly by the United Fruit Company and the Government of Costa Rica.

A new and more extensive sewer system and the enlargement and improvement of the waterworks are in contemplation by the governmental authorities. The completion of these will add greatly to the comfort and good health of the port and vicinity.

The morbidity and mortality of the town continues very great. More than 60 per cent of the cases treated in the hospitals are of malarial origin, largely of the frank intermittent type and among negroes, who are far from being immune to malarial infection.

The physician of the United Fruit Company's hospital informed me on my arrival here April 8, that he had discharged a case of yellow fever March 25. No other case could be found until May 28, when I reported 1 case by cable, quickly followed by 2 others. All were mild and recovered, and up to this date no other cases have been reported.

No other quarantinable disease has made its appearance in this port in the time covered by this report.

The total number of deaths for April, May, and June is 73. Of these, 20 died of malarial fever or some of its complications, 20 of infantile troubles, 6 of syphilis, 5 of tuberculosis, 6 stillborn, and the remaining 16 of various other causes. Thirteen of the 73 deaths were of patients brought from the banana farms to the hospitals here, and can not be charged fairly to Limon's mortality. The remaining 60 deaths, with an estimated population of 4,000, gives us the very high annual death rate per 1,000 of 60.

Since April 8 I have inspected 78 steamships, disinfected with burning sulphur in open pots the living quarters of 37, inspected and passed crews to the number of 3,195, and passengers 710, all for ports of the United States.

Nineteen bills of health for ports of the Republic of Panama have been viscé, according to special instructions.

Respectfully,

D. W. GOODMAN,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

PUERTO CORTEZ.

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. C. S. CARTER, SEASON OF 1903.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Puerto Cortez, Honduras, October 31, 1903

SIR: I have the honor to submit the following as final report of transactions at Puerto Cortez, Honduras, during the quarantine season ended October 31, 1903, viz:

	July.	Aug- ust.	Septem- ber.	Octo- ber.	Total.
Steamers	18	16	17	17	68
Passengers	84	47	66	91	288
Crew	395	321	341	309	1,426
Baggage	135	86	112	173	506

Number of pieces of baggage rejected, 18 for the season.

I have the honor to state that the health conditions of Puerto Cortez and surrounding country have been good throughout the entire season, there being very little sickness of any kind and no quarantinable diseases.

Respectfully,

C. S. CARTER,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. C. S. CARTER, SEASON OF 1904.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Puerto Cortez, Honduras, June 30, 1904.

SIR: I have the honor to submit to you the report of transactions occurring at this station during April, May, and June, 1904:

	April.	May.	June.	Total.
Steamers inspected	17	19	19	55
Schooners inspected	2	0	0	2
Passengers inspected	47	54	43	144
Crew inspected	398	417	311	1,126
Baggage inspected	80	98	83	261
Aliens inspected	21	19	17	57
Aliens rejected	0	0	0	0
Baggage rejected	20	10	10	40

SANITATION AND NEW PLANS.

I have the honor to state that the health and sanitary condition of Puerto Cortez has been very good. No quarantinable diseases have been reported, and very little sickness of any kind either in the port or surrounding country, the prevailing diseases being malarial; but, as the rainy season has set in, sickness will increase more during this period, which extends through the rest of the quarantine season and into December. There has also been an increase in the number of mosquitos during the last few days, owing to the continued rains.

In the surrounding country very little sickness of any kind has been reported. Consular certificates brought from Tegucigalpa, Tela, and San Pedro, by passengers going to the States, report no quarantinable diseases and little sickness.

The sanitation of Puerto Cortez during the summer has been fairly good, and will compare favorably with most of Central American ports, and, indeed, much better than some, and if the present plans go through it will be much more sanitary than it is now.

The city is bounded on the north by a salt marsh covered with foliage of all kinds. In area this marsh is 3 miles long and 2 wide, and entirely surrounds the town on the north side; beyond this marsh is the sea.

The Government is about to let a contract to have this swamp filled and cleared its entire length and breadth, and make it level with the city. I understand this bill is now before Congress and will surely pass. As the ground is so low, very little drainage can now be obtained. The intention is, if the plans are carried out, to cut canals the whole length of the swamp, connecting with the lagoon and cross canals from ocean to bay. This will give them practically a salt water sewerage, as they have 12 to 14 inches of tide on the ocean side. This contract claims to be finished in three years or less, and is to begin at once, or as soon as the concession is signed. If this contract is completed, I think this will be as healthy as any city on the coast. The sea wall, which we find in most tropical ports where sanitary improvements have been attempted, will not be built, and the drainage will be a great deal better than in most of such ports.

QUARANTINE.

There has been no trouble at this port in regard to enforcing the regulations. The consular certificate required by the regulation has been strictly adhered to by persons coming from interior towns. Baggage is also inspected very closely. There has been very little travel from either Amapala, on the Pacific coast, or San Salvador. None from Amapala direct, and only two from San Salvador. These were eight days en route, and were under observation here about fifteen to twenty days. Their business also kept them here for some time. Both of these gentlemen claimed to be immune, but only one had his certificate.

Fifty-seven aliens were also inspected at this port, passed, and none rejected.

C. S. CARTER, *Acting Assistant Surgeon.*

The SURGEON-GENERAL.

LIVINGSTON.

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. R. H. PETERS, SEASON OF 1903.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Livingston, Guatemala, November 2, 1903.

SIR: I have the honor to submit report of the transactions at this station for the period from July 1 to October 31, 1903.

Vessels cleared	37
Crews inspected	1,008
Passengers inspected	51
Baggage inspected	93

The health of Livingston remained good. No quarantinable disease in Livingston or adjacent country during the season.

Respectfully,

R. H. PETERS, *Acting Assistant Surgeon.*

The SURGEON-GENERAL.

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. R. H. PETERS, SEASON OF 1904.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Livingston, Guatemala, July 2, 1904.

SIR: I have the honor to submit the following report of transactions for year ended June 30, 1904:

The station was opened April 5, 1904, from which date work commenced, and, as directed in Bureau letter of April 22, 1904, I have regularly visited the port of Puerto Barrios, Guatemala, to inspect vessels and issue certificates to passengers leaving that port for the United States. No passengers have left Livingston direct, as the mail steamers of the United Fruit Company do not stop at this port, only call at Puerto Barrios, from which port all mail and most of the passengers embark. The steamers which come to Livingston are simply fruit vessels and only have limited passenger accommodations.

The steamers at Livingston anchor about a mile and a half from shore, and the fruit is taken out to them in lighters, and there is very little danger from mosquitoes, whereas in Puerto Barrios the vessels go alongside the dock and are liable to invasion, as the mosquitoes are very plentiful owing to the swampy nature of the surrounding country.

The passengers from Puerto Barrios come from the interior of Guatemala and Salvador, and, as it also has communications with the Pacific side, it makes it one of the dangerous ports on this coast.

Since the opening of the station 27 vessels have been inspected and given bills of health, 725 crew inspected, and 89 passengers given certificates; of this number 32 were aliens.

The destination of the vessels cleared from Livingston (14) and Puerto Barrios (13) were as follows: New Orleans, 18; Mobile, 7; New York, 1; Apalachicola, Fla., 1.

Livingston and Puerto Barrios have been free from all quarantinable diseases so far this season, malarial fever of a mild type being the principal sickness.

Respectfully,

R. H. PETERS,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

BOCAS DEL TORO.

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. PAUL OSTERHOUT, SEASON OF 1903.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Bocas del Toro, Colombia, November 5, 1903.

SIR: I have the honor to submit the following report of the transactions at this station for the period July 1, 1903, to and including November 4, 1903, when the service was discontinued:

Vessels inspected	70
Pieces of baggage disinfected	19
	===
Persons inspected:	
Ship's crews	1,609
Passengers	11

Total	1,620

Respectfully,

PAUL OSTERHOUT,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. PAUL OSTERHOUT, SEASON OF 1904.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND.*Bocas del Toro, Panama, July 2, 1904.*

SIR: I have the honor to submit the following statement of the transactions at this station for the fiscal year ended June 30, 1904, inclusive:

Vessels not being allowed to come alongside of the wharves, transportation to them is furnished by the consignee.

All vessels are boarded by me on arrival in order to see that the vessel is in a sanitary condition and that no sickness exists. Immediately prior to departure of vessels from this port they are again boarded by me, the crew and passengers, if any, inspected and certificates issued in accordance with the quarantine regulations of the United States. The consular bill of health is also signed after this inspection.

Vessels inspected	46
Pieces of baggage inspected	98
<hr/>	
Persons inspected:	
Ship's crews	1, 167
Passengers	58
<hr/>	
Total	1, 225

Quarantinable diseases.—No infectious or contagious disease has existed in this place during the present year. The last case of yellow fever that occurred in this section of country was a man that came here from Limon, Costa Rica, during October, 1901. He fell sick just twenty-four hours after arriving here. The last case to originate here was in August, 1901. The energetic methods employed by the local government last year to rid this section of smallpox has shown good results, as there has been no recurrence.

I am pleased to report that this place is now connected with the outside world by means of the wireless telegraph system, operated by the United Fruit Company. The connecting station is located in Limon, Costa Rica. The tariff rate of 10 cents (United States currency) per word to be added to the rate to Limon (all words counted)

Respectfully,

PAUL OSTERHOUT,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

CEIBA.

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. W. B. ROBERTSON, SEASON OF 1903.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND.*Ceiba, Honduras, October 31, 1903.*

SIR: I have the honor to submit the following supplemental report on the conditions and transactions at this station from July 1 to November 1, 1903, inclusive:

The conditions, as a whole, remain the same as those stated in the general report for the period ending June 30, 1903, inclusive.

Since the latter part of August there has been a considerable increase in the tonnage of this port in consequence of the depression of the Jamaica fruit trade from the effects of the recent hurricane there. The statistics are:

Vessels:	
Inspected	74
Disinfected	0
Crews (number of):	
Inspected	1, 465
Vaccinated	0
Passengers:	
Inspected	4
Vaccinated	0
Baggage inspected and disinfected, pieces	5

Health of crews.—The general health of the crews on the vessels trading here has been exceptionally good, even cases of minor ailments being practically absent.

Mosquitoes on vessels.—Personal observation and careful inquiries failed to demonstrate the presence or coming on board of mosquitoes while vessels are at anchor either here or along the coast. In the few cases in which a stray one was observed it was probably brought in the ship from the home port. The absence of them is presumably the result of the ships seldom approaching closer to shore than one-third of a mile at the various points of loading.

Passenger traffic.—This is not regularly engaged in, owing to the Louisiana and Alabama State boards requiring a medical officer on board all vessels carrying passengers and the small amount of such traffic not justifying such a procedure, the few cases in which passengers were carried being either under special permit or on a boat carrying a medical officer being sent to load here.

Health conditions of port.—The health conditions, both from a quarantinable and general standpoint, have been very good. With an estimated population of about 4,000, there have been during the past two and one-half months about 13 deaths.

In comparison with the same period of last year, there has been an appreciable amelioration in both the types and the number of cases of malaria, the most of them being mild forms of "intermittents" with a few "remittents," the "bilious remittent" type being absent.

Several cases of dysentery and a few deaths therefrom have been reported. These, so far as could be ascertained, were malarial in origin.

Among children there have been the usual gastrointestinal derangements, with but few deaths resulting therefrom.

The remaining cases of sickness being of ordinary types, call for no special mention.

Sanitation.—With the advent of a new administration considerable improvement in the sanitation of the town has been effected. The streets are kept clean and free from grass and weeds. Under penalty of an incremental fine, all properties must be kept free from refuse, rubbish, and weeds. The dirt must be collected in suitable receptacles and is removed by municipal carts beyond the limits of the town at least once a week. Measures are now being instituted to have the garbage burned; also for enforcing sanitary care of the privies and cesspools attached to dwellings.

W. B. ROBERTSON,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. W. B. ROBERTSON, SEASON OF 1904.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Cciba, Honduras, July 1, 1904.

SIR: I have the honor to transmit the following general report of the conditions and transactions at this station from the date of opening, April 20, to June 30, inclusive:

The boarding of vessels is done by boats furnished by the agent or master of the vessel for which the inspection is made. Owing to the uncertainties of loading and clearance, this has at times to be done at night, and often through rough surf.

Transactions.

Steamers inspected and passed	100
Steamers disinfected	1
Sailing vessels inspected and passed	7
Sailing vessels disinfected	0
Crew on steamers	2, 026
Crew on sailing vessels	44
Passengers on steamers	17
Passengers on sailing vessels	1

Seldom, if ever, are mosquitoes found on the vessels while loading on this coast. This immunity is very probably due to the distance from the coast at which the ships are anchored.

From a quarantine standpoint, the health conditions of this port have been excellent since the opening of the season, and such has been the case for several years. As yet the local government has not instituted any reliable system of quarantine with other ports.

The mortality record seems about the same as in former years, but it is difficult to get reliable statistics, as the system of recording deaths is a rather crude one.

Malaria is the prevailing disease, generally manifesting itself in the milder types, occasionally assuming the graver forms.

There has been a slight increase in the number of cases of dysentery, compared with the same time last year.

Respectfully submitted,

W. B. ROBERTSON,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

BLUEFIELDS.

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. D. W. GOODMAN, SEASON OF 1903.

SIR: I have the honor to make the following report of the transactions at the Port of Bluefields, Nicaragua, from July 1 to October 31, 1903, inclusive:

Forty-six steamships, with their crews, aggregating 845 men, were inspected and given bills of health; 115 passengers were inspected and passed, and their baggage, 149 pieces, was disinfected.

During these four months there occurred in Bluefields and vicinity 28 deaths, which, based upon a population of 4,000, gives an annual death rate per 1,000 of 21.

The general health and sanitary conditions of the port were good, with no evidence at any time of quarantinable diseases.

Respectfully,

D. W. GOODMAN,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. W. H. REILLEY, SEASON OF 1904.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE, OFFICE OF MEDICAL OFFICER IN COMMAND, *Bluefields, Nicaragua, July 1, 1904.*

SIR: In compliance with Bureau letter dated March 18, I have the honor to submit report of conditions and transactions at this station from the date of my arrival, April 10, to June 30, inclusive.

The disinfecting plant, which was the property of the Bluefields Steamship Company, was destroyed by fire last year.

All vessels are boarded by the marine-hospital inspector just prior to their departure, and a thorough inspection of the ship, crew, and passengers made.

Certificates giving the number of crew and passengers, nature of cargo, the sanitary condition of crew, passengers, ship, and surrounding country are attached to the original and duplicate bills of health and a triplicate sent to the Surgeon-General with the weekly report.

All passengers, with the exception of those coming from elevated and non-infectible points, are requested to be under the observation of the marine-hospital inspector for at least five days prior to their departure, at which time a personal certificate of identification is given and a duplicate sent the Surgeon-General.

In accordance with the regulations, there was no fumigation of baggage.

The sanitary condition of Bluefields and surrounding country is very good from a quarantine standpoint. The estimated population is about 4,000.

From April 10 to July 1 there occurred 26 deaths, from the following causes: Tuberculosis 8, dysentery 3, premature birth 1, accidents 2, ascariis lumbri-

coldes 1, senility 1, thrush 1, ascites 1, malarial fever 4, heart disease 1, cirrhosis of liver 1, appendicitis 1, tetanus 1.

Vessels inspected (sailing to United States).....	29
Crews inspected (sailing to United States).....	531
Passengers inspected (sailing to United States).....	115
Vessels inspected (sailing to Panama).....	2
Crew inspected (sailing to Panama).....	11
Passengers inspected (sailing to Panama).....	17

Respectfully,

The SURGEON-GENERAL.

W. H. REILLEY,
Acting Assistant Surgeon.

BELIZE.

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. W. H. CARSON, SEASON OF 1903.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE, OFFICE OF MEDICAL OFFICER IN COMMAND, *Belize, British Honduras, November 1, 1903.*

Report of transactions at the port of Belize, British Honduras, from July 1, to November 1, 1903.

Steamers inspected and passed.....	49
Steamers disinfected.....	0
Sailing vessels inspected and passed.....	2
Sailing vessels disinfected.....	0
Crews on steamers.....	1, 376
Crews on sailing vessels.....	11
Passengers on steamers.....	103
Passengers on sailing vessels.....	0

Respectfully,

The SURGEON-GENERAL.

WM. H. CARSON,
Acting Assistant Surgeon.

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. WM. H. CARSON, SEASON OF 1904.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE, OFFICE OF MEDICAL OFFICER IN COMMAND, *Belize, British Honduras, July 1, 1904.*

SIR: I have the honor, complying with circular letter dated Washington, March 18 last, to transmit herewith report of the transactions at this station, a fruit port, for (eighty-one days) April, May, and June, the fiscal year ending June 30, 1904.

The sanitary condition of the town of Belize during the period of time noted above has been good, for a tropical seaport; nor has there been the least suspicion as to the existence of any contagious or infectious disease in the surrounding territory.

It may be observed here that while Belize has had several recorded outbreaks of yellow fever since 1860 there is no record as to its reappearance since 1891, when 2 deaths occurred here.

The Belize Public Hospital (Dr. C. H. Eyles, colonial surgeon, and I. H. H. Harrison, resident surgeon), accommodating 48 patients, is one of the three government hospitals located in British Honduras. This institution has 34 patients (7 white), and none of any interest from a quarantine point of view.

There have been 42 deaths (1 white) from all causes at this port (21.72 per 1,000 per annum); none due to a contagious or infectious disease.

Since June, 1903, extensive sanitary improvements, such as filling town lots to a standard grade with sand and silt dredged from the shallow harbor, cementing drains, and other systematic efforts to rid this port of dangerous mosquitoes, have been in active prosecution.

Report of transactions at the fruit port of Belize, British Honduras, for (April, May, and June) the fiscal year ending June 30, 1904.

Steamers inspected and passed.....	27
Steamers disinfected.....	0
Sailing vessel inspected and passed.....	1
Sailing vessel disinfected.....	0
Crews on steamers.....	800
Crews on sailing vessels.....	7
Passengers on steamers.....	94
Passengers on sailing vessels.....	0
Number of aliens inspected.....	54

Respectfully,

WM. H. CARSON,
Acting Assistant Surgeon.

The SURGEON-GENERAL

PANAMA.

DETAIL OF OFFICERS TO COLON AND PANAMA.

Soon after it was positively decided that the United States would purchase the Panama Canal the following officers were detailed to the consular offices in Panama and Colon to inspect vessels for United States ports and to transmit sanitary information, viz: Asst. Surg. Claude C. Pierce, Panama, December 8, 1903; Surg. J. C. Perry, Colon, January 16, 1904; Acting Asst. Surg. Herman B. Mohr as assistant to Surgeon Perry, February 12, 1904.

Details were also made to other foreign ports for the protection of the United States with the expectation that the services of these officers would be also of value to Panama ports, viz: Acting Asst. Surg. Fleetwood Gruver, Guayaquil, Ecuador, February 3, 1904; Asst. Surg. B. J. Lloyd, Callao, Peru, February 26, 1904; and Passed Asst. Surg. L. D. Fricks, La Guayra, Venezuela, February 29, 1904.

Special attention is invited to the very excellent reports on sanitary matters on the Isthmus of Panama, the cities of Colon and Panama, and the territory between them, by Surg. J. C. Perry and Asst. Surg. Claude C. Pierce. These reports were timely and of great service. (See "Preliminary report on sanitary condition of Colon and Panama, and the Isthmus between these points," Public Health Reports, March 4, 1904, by J. C. Perry; and by the same officer, "Prevailing diseases on the Isthmus along the canal route," Public Health Reports, April 29, 1904. Also by Assistant Surgeon Pierce, "Sanitary report of Panama and vicinity," Public Health Reports, February 5, 1904).

REPUBLIC OF PANAMA REQUESTS ASSISTANCE OF SERVICE OFFICERS ON DUTY AT FOREIGN PORTS.

Official request was received from the Panama Republic for the assistance of the officers in neighboring republics, as shown by the following correspondence:

DEPARTMENT OF STATE,
Washington, February 24, 1904.

SIR: I have the honor to inclose for your consideration copy of a note from the minister of Panama at this capital, in which he suggests that United States medical officers at contaminated ports in foreign countries may be instructed to act in regard to vessels sailing for ports of Panama as they do in regard to vessels sailing for United States ports.

Awaiting your reply, I have the honor to be, sir, your obedient servant,

JOHN HAY.

The SECRETARY OF THE TREASURY.

[Inclosure.]

LEGATION OF THE REPUBLIC OF PANAMA.
Washington, D. C., February 20, 1904.

SIR: The Bureau of Public Health and Marine-Hospital Service details in foreign ports, which are under the suspicion of contagious diseases, medical officers to assist the consuls of the United States, in order to prevent the transportation of diseases from said ports to ports of the United States by ships bound for them.

In view of the importance of the sanitary precautions for the great work that is going to be accomplished by the United States on the territory of the Republic of Panama, I beg to suggest to your excellency that orders be given to the medical officers detailed at the contaminated ports to exercise their authority and to dictate the sanitary measures for all ships leaving said ports for the Republic of Panama exactly in the same manner as they are instructed to do for ships bound for the United States.

The adoption of this suggestion by the Government of the United States would be highly appreciated by the Government of the Republic of Panama.

I am, sir, with great respect, your very obedient servant.

P. BUNAU-VARILLA.

His Excellency JOHN HAY.

Secretary of State, Washington.

FEBRUARY 27, 1904.

SIR: Referring to your letter of the 24th instant, inclosing, for my consideration, copy of a note from the minister of Panama at this capital, in which he suggests that the United States medical officers at contaminated ports in foreign countries may be instructed to act in regard to vessels sailing for ports of Panama as they do in regard to vessels sailing for United States ports, I have the honor to state that the Surgeon-General of the Public Health and Marine-Hospital Service will issue instructions to officers of the Service serving in such foreign ports to comply with this request.

To facilitate the carrying out of these instructions it is requested that a circular letter of instructions be issued to all consuls in foreign ports to insure their cooperation in this work.

Respectfully,

R. B. ARMSTRONG,
Acting Secretary.

The SECRETARY OF STATE.

The following circular letter of instructions was sent to all officers serving in foreign ports and ports in the possession and dependencies of the United States:

[Circular letter.]

MARCH 2, 1904.

To commissioned medical officers, acting assistant surgeons of the Public Health and Marine-Hospital Service, and others concerned:

You are hereby informed that the minister of Panama at Washington has requested, through the Department of State, that United States medical officers at contaminated ports in foreign countries may be instructed to act in regard to vessels sailing for ports of Panama as they do in regard to vessels sailing to the United States; and the Secretary of the Treasury has informed the Secretary of State that instructions will be sent to officers of the Service serving in foreign ports to comply with this request.

You are therefore directed to carry out the instructions as above indicated.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

BILLS OF HEALTH FOR PANAMA TO BE SIGNED BY SERVICE OFFICERS.

Complaints having been received from the medical officers at Cal-lao, Peru, and Guayaquil, Ecuador, that the Panama authorities at Panama were not requiring their certificates and bills of health upon

the arrival of the vessels at Panama, and that this weakened their authority in their respective ports, representation was made to the State Department, with recommendation that the attention of the Panama authorities be called to this matter, and the great importance of cooperation in this sanitary work be shown. The matter was actively taken up with Panama by the State Department, and accordingly instructions were cabled on April 25, 1904, by the Panama Government to its consuls at Callao, Guayaquil, and La Guayara to cooperate with the officers of this Service in the clearance of vessels bound for ports in the Republic of Panama. The following decrees were issued by the Panaman Government:

Decree No. 8 of 1904.

[April 30, 1904.]

By which is dictated a regulation for the sanitary service.

The President of the Republic, by the power vested in him and in consideration of a request made to him by the national board of health in letter No. 532, dated April 22, 1904, hereby decrees:

ARTICLE 1.

In order that vessels be received in the port of Panama, coming from Peruvian or intermediate ports, it is required that the bills of health of such vessels shall be viscéd by the medical officer of the United States Public Health and Marine-Hospital Service in those ports that have such officers attached to the United States consul's office, as is the case at Guayaquil.

ARTICLE 2.

The agents of the Pacific Steam Navigation Company and of the Company of South American Steamers are obliged to give strict compliance to the regulations dictated or that shall be dictated in the future by the medical officers of the above-named service, in reference to those steamers of either company that are dispatched to Panama.

Communicate and publish this law.

MANUEL AMADOR GUERRA.

M. QUINTERO, V.,

Secretary of Public Works.

PANAMA, April 30, 1904.

No. 9.

Decree of May 11, 1904, by which is set forth a measure in relation to the public health service.

The President of the Republic, in accordance with powers invested in him, decrees:

ARTICLE 1.

The regulations of the decree of the national executive No. 8, of April 30 last, have been extended to the port of Colon.

In consequence, in order that steamers proceeding from foreign ports may have permission to enter the port of Colon, it is required that their respective bills of health shall have been viscéd by the doctor of the Public Health and Marine-Hospital Service of the United States if the steamers proceed from ports where a doctor of the above-named Service is attached to the United States consulate.

ARTICLE 2.

The agents at Colon of the respective steamship companies are obliged strictly to comply with the said regulations, or with the regulations which may be made

in the future by the doctor of the above-mentioned Service, in respect to vessels which are dispatched to the port of Colon.

Communicate and publish.

Given at Panama May 11, 1904.

M. AMADOR GUERRA.

The secretary of public works,
The subsecretary of public works,
For the subsecretary of government,

MANUEL QUINTERO. V.
ADOLPHO ALEMAN.
H. GONZALES GUILLE.

RECOMMENDATION THAT INCOMING QUARANTINE BE PLACED IN HANDS OF SERVICE.

Notwithstanding the above measures, the situation was still unsatisfactory, since the quarantine authorities at Panama were not demanding bills of health issued by representatives of this Service. This and other facts made it desirable that the quarantine at Panama should be conducted by the Service.

On May 12 the following letter, with two inclosures, was addressed to Rear-Admiral John G. Walker in regard to this subject, one from the medical officer of this Service at Panama, the other from the medical officer at Guayaquil, Ecuador:

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, May 12, 1904.

MY DEAR SIR: Referring to my conversation with you yesterday, I transmit herewith for your information a copy of a letter received from Assistant Surgeon Pierce, at Panama, showing the apprehension which exists concerning the management of quarantine at Panama by the local authorities. It seems that passengers coming from districts in Peru infected with bubonic plague were transferred at Guayaquil, Ecuador, and immediately came on to Panama and received no inspection.

I also inclose a copy of a portion of a letter received from Acting Assistant Surgeon Gruver, at Guayaquil, from which it will be seen that the vessels which conveyed the passengers from Peru to Guayaquil and subsequently came through to Panama without inspection developed a case of bubonic plague on board.

I am sure you will appreciate, as I do, that this is a dangerous state of affairs.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

Rear-Admiral JOHN G. WALKER, U. S. Navy,
Chairman Isthmian Canal Commission, Washington, D. C.

[Inclosures.]

PANAMA, PANAMA, *April 24, 1904.*

SIR: I have the honor to quote as follows from the Panama Star-Herald of this date an article by the editor in criticism of the quarantine officer at this port. The article appeared only in the Spanish side of the publication:

"It is asserted here, with just cause, that the power of the board of health in reference to the vigilance necessary to prevent the contagion of the bubonic pest that to-day exists in the south, principally in Lima and Antofagasta, has been abused, and by their transgression they have exposed this city to infection by this terrible disease. We know of a certainty that the steamer *Tucapel* returned to this port with the passengers of the steamer *Limiri*, who were transferred at Puna during the late hours of the night. These passengers entered into this city without difficulty, because the *Tucapel* was at once given free pratique. This deed, more than being censurable, should be published and the remedy should be applied to prevent its recurrence. It is no longer possible to bear patiently that the whole vital interests of a community should be injured for the simple motive of business."

This steamer, the *Tucapel*, took her passengers aboard at Puna, the island at the mouth of the river at Guayaquil, and landed them in Panama without

detention or observation. The passengers were from southern ports, but I do not know which ones. The quarantine authorities are not equipped to care for vessels from infected ports, as they have absolutely no quarantine plant or facilities at this port.

Respectfully,

CLAUDE C. PIERCE,
Assistant Surgeon.

Respectfully forwarded.

COLON, PANAMA, April 25, 1904.

J. C. PERRY, *Surgeon.*

The SURGEON-GENERAL.

OFFICE OF MEDICAL OFFICER IN COMMAND,
PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Guayaquil, Ecuador, April 23, 1904.

SIR: * * * A cable message has been received here from Callao that the steamship *Limiri*, which was refused entrance here on the 10th instant, but which exchanged passengers with the steamship *Tucapel*, bound for Panama and returned to Callao, developed a case of bubonic plague on board.

Respectfully,

FLEETWOOD GRUVER,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

The importance of the subject being so great the Secretary of the Treasury addressed the following letter to the Secretary of State:

[Letter.]

TREASURY DEPARTMENT,
Washington, May 16, 1904.

SIR: I have to transmit herewith a letter from the Surgeon-General of the Public Health and Marine-Hospital Service, with two inclosures, showing the status of the quarantine situation at Panama.

If consistent with the views of your Department, I would recommend that the suggestions of the Surgeon-General be favorably acted upon and that, through the diplomatic representatives of the Panama Government, the quarantine inspection, particularly at the ports of Panama and Colon, be at once placed in the hands of the representative of the United States.

I am informed by the Surgeon-General of the Public Health and Marine-Hospital Service that Asst. Surg. Claude C. Pierce, now on duty in the office of the United States consul-general at Panama, is not only familiar with all quarantine procedures, but is believed to have the confidence and good will of the Panama authorities.

Respectfully,

H. A. TAYLOR, *Acting Secretary.*

The SECRETARY OF STATE.

[Inclosures.]

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, May 16, 1904.

SIR: I have the honor to inclose herewith copy of a memorandum submitted to Admiral Walker, chairman of the Isthmian Canal Commission, on May 14, which sets forth somewhat in detail the danger now existing of the introduction of epidemic disease, particularly yellow fever and bubonic plague, into the port of Panama through inefficient quarantine administration by the Panama authorities.

I also transmit a memorandum, headed "Memorandum No. 2," showing the efforts which have been put forth by the State Department to secure the cooperation of the Panama Government in requiring the assistance of their consuls in

foreign ports, and requiring the presentation of bills of health and certificates of vessels arriving at the ports of Panama and Colon.

By request of the Government of Panama, all officers of the United States Public Health and Marine-Hospital Service stationed at Callao, Peru, Guayaquil, Ecuador, and La Guayra, Venezuela, have been directed to take the same precautions with regard to vessels leaving those ports for the ports of Panama as they are obliged under the law to take with regard to vessels leaving for ports in the United States, and it is believed that, as shown in "Memorandum No. 2," the necessary action has been taken by the State Department to render this measure effective.

In the meantime, however, as shown in the memorandum to Admiral Walker (Memorandum No. 1), the inspection at the Panama quarantine is very defective, and since the exclusion of epidemic disease from the Canal Zone is at present dependent upon the administration of quarantine at Panama and Colon, and since it is believed that under the terms of the treaty arrangements are to be effected by which the administration of this quarantine will fall to the United States Government, I would urge that the assumption of this function by the United States through an understanding with the Panama Government should be immediate.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

The SECRETARY OF THE TREASURY.

[Memorandum (No. 1) for Admiral Walker, chairman of the Isthmian Canal Commission.]

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, May 14, 1904.

The quarantine situation at Panama demands immediate attention. At present the protection of the Canal Zone from the introduction of contagious diseases is dependent upon the efficiency of the quarantine administration in Panama by the Panama authorities. It is well known that there is no quarantine plant at Panama, and, from advices received by myself, the quarantine inspection is very faulty. This latter, at least, should be rectified at once; otherwise there is danger that while the United States Government is perfecting its plans and initiating its government of the Canal Zone and its surveillance of Panama under the treaty, epidemic diseases may slip in.

The records show that Panama in the past has been repeatedly infected from South American ports. Yellow fever has been the principal epidemic disease thus introduced, but the recent invasion of Peru and Chile by the bubonic plague presents a new danger to Panama and the Canal Zone which is real and imminent by reason of the insidious transmission of bubonic plague and the extreme difficulty of eradicating the same when once introduced.

An illustration of the present laxity of the quarantine at Panama has been received in official communications at the Public Health and Marine-Hospital Service Bureau. The steamship *Limiri*, from Callao to Guayaquil, Ecuador, was refused entrance on April 10 at Guayaquil on account of the bubonic plague in Peru. The passengers, however, were transferred to the steamer *Tucapel*, and the latter vessel sailed for Panama and landed them in Panama without detention or observation. The steamship *Limiri* on her return trip from Guayaquil to Callao developed a case of bubonic plague on board.

In my opinion, arrangements should be effected by which the quarantine inspection at Panama may be conducted by the United States Government. Although Colonel Gorgas and Surgeon Carter are expected to sail for the Isthmus shortly, it seems imperative that the quarantine inspection by a United States officer and in accordance with the system in vogue in the United States should not await their arrival, but should begin at once. Assistant Surgeon Pierce, on duty in the office of the United States consul-general at Panama, is an experienced quarantine officer and has the confidence of the Panama authorities. It is suggested that such representations should be made to the Panama Government as will induce them to assign to Assistant Surgeon Pierce the duty of quarantine inspection, or, if this is impracticable, to have him present and assist at the inspection.

It is also suggested that bills of health given at foreign ports by the consuls of the Panama Government and the certificates given by the officers of the Public Health and Marine-Hospital Service by request of the Panama Government should be required as a prerequisite to the entry of vessels at the port of Panama.

WALTER WYMAN,
Surgeon-General, Public Health and Marine-Hospital Service.

[Memorandum No. 2.]

It appears from the correspondence that the consul of Panama at Callao, Peru, having received no instructions from his Government, refused to cooperate with the Public Health and Marine-Hospital Service officer in the inspection and clearance of vessels bound for ports in Panama. The failure of the Government of Panama to instruct its consular officers was brought to the attention of the minister of Panama at this capital and also cabled to Mr. Russell, chargé d'affaires of the United States at Panama. Mr. Russell replied on the 25th of April that instructions were that day being telegraphed to consuls of Panama at Callao, Valparaiso, and Guayaquil, and that instructions would be sent to the consul at La Gualra.

Information in the possession of the Surgeon-General of the Public Health and Marine-Hospital Service indicated that the introduction of disease into Panama was made possible by the failure of the authorities of Panama to require vessels arriving at ports of the Republic to present bills of health. The following instruction was accordingly sent to Mr. Russell on the 28th of April, 1904:

"I have to acknowledge the receipt of your telegram of the 25th instant, reading as follows:

"Panama Government cables instructions to-day to its consuls, Callao, Valparaiso, Guayaquil, to cooperate with health officers of the United States in the matter of clearance of vessels for ports in the Republic of Panama. Instructions will be sent to the consul at La Gualra also."

"It is understood by the Department that masters of some vessels decline to accept the papers furnished by United States medical officers on the ground that they are not demanded by the authorities at Panama. You will inform the Panaman Government of this and say that the effectiveness of the work of our consular and medical officers in behalf of Panama will depend almost entirely upon a strict enforcement of the requirement that masters of vessels shall produce to the proper authorities of the port of arrival in Panama, as condition to entry, the bills of health and certificates of disinfection issued by our officers."

[Letter.]

DEPARTMENT OF STATE,
Washington, May 18, 1904.

Sir: I have the honor to acknowledge the receipt of your Department's letter of the 16th instant with inclosures from the Surgeon-General of the Public Health and Marine-Hospital Service concerning the quarantine situation at Panama.

An instruction by telegraph was dispatched to the United States chargé d'affaires ad interim at Panama in the sense desired by the Surgeon-General. This was followed on May 17 by an instruction by mail, with which were inclosed copies of your Department's letter and the memorandums accompanying it.

I have the honor to be, sir, your obedient servant,

FRANCIS R. LOOMIS,
Acting Secretary.

The SECRETARY OF THE TREASURY.

ASSISTANT SURGEON PIERCE APPOINTED HEALTH OFFICER AT PORT OF PANAMA.

[Letter.]

DEPARTMENT OF STATE,
Washington, May 24, 1904.

SIR: Referring to your Department's letter of the 16th instant, in regard to the quarantine situation at Panama, I have the honor to quote for your information the text of a telegram, dated the 21st instant, from the chargé d'affaires ad interim of the United States at Panama:

"Surgeon Pierce has been appointed health officer of the port of Panama in compliance with request contained in your cable of the 16th instant."

For the completion of your Department's files, I inclose a copy of the telegram sent by this Department to Mr. Russell on May 16, to which he refers.

I have the honor to be, sir, your obedient servant,

JOHN HAY.

The SECRETARY OF THE TREASURY.

[Inclosure.]

DEPARTMENT OF STATE,
Washington, May 16, 1904.RUSSELL, *Chargé, Panama*:

In view bubonic plague Peru and Chile and past infections Panama from South America and to prevent slipping in of epidemic diseases while this Government is perfecting plans and initiating government Canal Zone, we desire to conduct quarantine inspection at Panama under treaty at once in accordance with United States system. Pending arrival Colonel Gorgas and Surgeon Carter, expected to sail shortly, request Panaman Government to assign to Assistant Surgeon-General Pierce, at consulate-general, duty of quarantine inspection, or have him present to assist. Also desired bills health given by Panaman consuls and certificates given at request Panaman Government by officials Marine-Hospital Service be required as prerequisite to entry vessels.

LOOMIS, *Acting*.

On May 26 Assistant Surgeon Pierce notified the different steamship companies interested, at Panama, that he had assumed the duties of the doctor of the port at Panama, and that the quarantine regulations of the United States would be observed at that port, in the following letter:

[Letter.]

PANAMA, PANAMA, May 26, 1904.

SIR: You are hereby advised for your information and action that by decree No. 12, of May 24, 1904, His Excellency the President of the Republic of Panama abolished the position of doctor at the port and assigned those functions pertaining to the maritime quarantine to the United States Public Health and Marine-Hospital Service.

I, having been designated by the Surgeon-General of the above-named Service as the officer charged with these duties, inform you that the quarantine regulations of the United States will be observed at this port, and that one of the requisites to entry of vessels will be the bills of health and supplemental bills of health issued by American consuls, acting for Panama, and the certificates of inspection or disinfection that will be issued by officers of the United States Public Health and Marine-Hospital Service in those ports where such officers are stationed.

You will notify the masters of the vessels of your company and others concerned.

Respectfully,

CLAUDE C. PIERCE,
Assistant Surgeon, U. S. Public Health and Marine-Hospital Service,
Quarantine Officer at Panama.

Copies sent to the agents of the Pacific Mail Steamship Company, Pacific Steam Navigation Company, and Compania Sud America de Vapores.

DETAIL OF SURG. H. R. CARTER FOR DUTY UNDER ISTHMIAN CANAL
COMMISSION.ISTHMIAN CANAL COMMISSION,
Washington, D. C., May 11, 1904.

SIR: I have the honor to request that the Secretary of the Treasury be asked to order Surg. H. R. Carter, of the Public Health and Marine-Hospital Service, to report to me for duty under the Isthmian Canal Commission, upon the Isthmus of Panama, in connection with quarantine matters there.

I am, with great respect,

J. G. WALKER,
Chairman of Commission.

The SECRETARY OF WAR, *Washington, D. C.*

[Indorsement.]

WAR DEPARTMENT, *May 14, 1904.*

Respectfully referred to the honorable the Secretary of the Treasury for his consideration.

ROBERT SHAW OLIVER,
Acting Secretary of War.

TREASURY DEPARTMENT,
May 19, 1904.

SIR: I have the honor to acknowledge receipt, by indorsement from you under date of May 14, 1904, of letter from Rear-Admiral John G. Walker, chairman of the Isthmian Canal Commission, in which he requests the detail of Surg. H. R. Carter, of the Public Health and Marine-Hospital Service, to report to him for duty under the Isthmian Canal Commission upon the Isthmus of Panama in connection with quarantine matters, and to state that Surgeon Carter will be detailed for the duty in question.

Respectfully,

H. A. TAYLOR,
Acting Secretary.

The SECRETARY OF WAR.

TREASURY DEPARTMENT,
Washington, D. C., May 25, 1904.

Surg. H. R. CARTER,
Public Health and Marine-Hospital Service, Baltimore, Md.

SIR: In accordance with a request of Rear-Admiral John G. Walker, U. S. Navy, dated May 11, 1904, and approved by the Secretary of the Treasury, you are hereby directed to report by letter or in person to Rear-Admiral John G. Walker, chairman of the Isthmian Canal Commission, for duty in connection with quarantine matters upon the Isthmus of Panama.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

SURG. J. C. PERRY AND ASST. SURG. C. C. PIERCE ORDERED TO REPORT TO
ISTHMIAN CANAL COMMISSION FOR DUTY.

Admiral John G. Walker, chairman Isthmian Canal Commission, having requested that Surg. J. C. Perry, stationed at Colon, Panama, and Asst. Surg. C. C. Pierce, at Panama, both of the Public Health and Marine-Hospital Service, be ordered to report to the Canal Commission for duty in connection with the maritime quarantine at Colon and Panama, on June 24 orders as follows were cabled to Surgeon Perry:

WASHINGTON, *June 24, 1904.*

PERRY, *American Consulate, Colon, Panama:*

Report by letter to Canal Commission, Washington, for duty maritime quarantine; pending orders report in person to General Davis. Instruct Pierce same.

COLON.

REPORT OF TRANSACTIONS AT COLON, PANAMA, BY SURG. J. C. PERRY.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND.*Colon, Panama, July 1, 1904.*

SIR: I have the honor to submit report of transactions at this station for the period ended June 30, 1904. The work of inspection of vessels sailing for United States ports, in order to eliminate as far as possible the danger of transmitting yellow fever to ports of the United States, was instituted on February 9, 1904. During the period embraced by this report, February 9 to June 30, 1904, no cases of yellow fever or other quarantinable diseases have been reported in Colon; therefore disinfection work at this port has been nil. However, when the fact that a number of vessels sailed from this port to places in the United States susceptible of infection with yellow fever is taken into consideration, it will be seen that the detail of an officer for the maintenance of this inspection service at Colon is a wise precaution.

The following facts concerning the vessels sailing between Colon and ports on the Gulf coast of the United States are submitted:

The vessels plying between Colon and New Orleans belong to the Leyland, Harrison, and United Fruit Company lines, the two former touching at Kingston, Jamaica; Bellze, British Honduras, and Veracruz, Tampico, and Progreso, Mexico, before reaching New Orleans. During the close season, from April 1 to November 1, they are detained at the Mississippi River Quarantine Station, where they are subjected to the regulations of the Louisiana State board of health. The vessels of the United Fruit Company come direct from New Orleans and then clear for New Orleans via either Bocas del Toro or Limon, Costa Rica, and during the close season are not allowed to carry passengers from this port. Any passengers on board, coming from New Orleans and bound to Bocas or Limon, are not allowed to come on shore at Colon, and neither is the crew allowed ashore while in this port. During this season these vessels also have on board a medical inspector of the Louisiana State board of health who fumigates with sulphur all the compartments for passengers and crew in order to destroy mosquitoes, and a daily pulse and temperature record of every one on board is kept during the voyage.

The vessels that have cleared for other ports on the Gulf coast were, with the exception of the ships of the United States Navy to Pensacola and Key West, all small sailing craft, which, before entering, touch at the national quarantine stations for disinfection and detention.

All vessels were inspected, passengers and crew being carefully examined just previous to sailing, and during the period covered by this report no person was rejected or found suffering with any quarantinable disease.

The tabulated statement submitted below gives the number of vessels and the number of crew and passengers on board inspected, by months; and other tables show the number of vessels of different countries and the ports to which they have sailed during this period.

Summary of transactions at Colon, Panama, from February 9 to June 30, 1904.

	Febru- ary.	March.	April.	May.	June.	Total.
Steamers inspected and passed	6	27	12	12	16	73
Sailing vessels inspected and passed	1	2	1	1	3	8
Crew on steamers	443	2,281	950	1,064	1,524	6,262
Crew on sailing vessels	8	18	8	8	22	64
Passengers on steamers	581	888	504	457	444	2,874
Passengers on sailing vessels	0	0	0	0	0	0

Of the above vessels during the period mentioned there were:

American	40
British	25
Norwegian	5
German	5
Spanish	4
Italian	1
Austrian	1
Total	81

Of the American vessels specified 16 were ships of the United States Navy.

Bills of health were issued to vessels sailing for the following ports in the United States:

New York	23
Philadelphia	1
Norfolk, Va	2
Key West, Fla	2
Apalachicola, Fla	1
Pensacola, Fla	4
Pascagoula, Miss	3
Biloxi, Miss	1
New Orleans, La	29
Ponce, P. R.	6
San Juan, P. R.	2
Port not specified	7
Total	81

In addition to the inspection service a study of the sanitary and health conditions on the Isthmus has been made in order to determine their bearing on vessels sailing from Isthmian ports to places in the United States. This series of reports has already been published in the Public Health Reports.

Respectfully,

J. C. PERRY, *Surgeon*.

The SURGEON-GENERAL.

PANAMA.

REPORT OF TRANSACTIONS AT PANAMA, PANAMA, BY ASST. SURG. CLAUDE C. PIERCE.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

OFFICE OF MEDICAL OFFICER IN COMMAND.

Panama, Panama, July 2, 1904.

SIR: I have the honor to make the following report of transactions for the port of Panama during the six months ending June 30, 1904:

The duties of the station were assumed on January 5, 1904, prior to which time the bills of health had been issued by the consul-general without medical inspection of passengers or crew, except during the period of yellow-fever epidemic in 1897, when he was authorized to employ an acting assistant surgeon to inspect the personnel of those vessels clearing for San Francisco.

The bills of health issued by the consul-general during the year 1904 have been signed by myself, in conjunction with the consul-general, after inspection of the vessel, crew, and passengers.

Below is given a synopsis of the work done during the six months ending June 30, 1904:

Bills of health issued	40
Officers and crew of vessels inspected	1,797
Cabin passengers inspected	342
Steerage passengers inspected	420
Total inspected	2,559
Destination of vessels:	
San Francisco	37
Port Townsend	1
Honolulu	2
Class of vessels:	
Pacific Mail passenger steamers	27
Sailing vessels, British	1
Auxiliary schooner, British	1
United States naval vessels	11

The vessels of the Navy to which bills of health were issued were not inspected and their crews are not included in the number given above. The ves-

sels were as follows: *Petrel, Marblehead, Concord, New York, Bennington, Wyoming, Paul Jones, Preble, Boston*, and the collier *Nero*.

During the period covered by this report the only quarantinable diseases that have occurred in the city of Panama have been six cases of yellow fever and one case of smallpox. The general mortality for this period will be made the subject of a later report.

No cases of quarantinable infectious or contagious diseases have been found among the crew of passengers inspected.

Respectfully,

CLAUDE C. PIERCE, *Assistant Surgeon*.

The SURGEON-GENERAL.

ECUADOR.

GUAYAQUIL.

REPORT OF TRANSACTIONS AT GUAYAQUIL, ECUADOR, BY ACTING ASST. SURG. FLEETWOOD GRUVER.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Guayaquil, July 1, 1904.

SIR: I have the honor to make the following report of conditions and transactions at this port for that part of the six months ending June 30, 1904, during which I have been here (from February 27, 1904).

The following bills of health were issued: Panama and intermediate ports, 7; Panama direct, 9; San Francisco and intermediate ports, 3; New York and intermediate ports, 3; Habana, 1. Of these, 11 were original and 12 supplemental.

During the month of March I examined the total personnel of all vessels leaving for Panama or the United States.

Quarantine has been of a very indefinite character. On March 30 a nonintercourse quarantine was established against all vessels coming from Peruvian ports. This was because of the reported condition of plague in the south. On April 10 this quarantine was partially raised and vessels were received "incomunicado." Since then, for this reason, I have not been able to examine vessels, passengers in transit, or crews, except those embarking at this port, and coasting vessels. From April 10 to May 5 no bills of health were issued to vessels clearing for Panama. This was fully reported by cable and letter, under dates of April 17 and 18.

On June 4 the board of health decided again to close the port against all vessels which had touched at any infected port, and not even to admit them on their return voyage. This continued to June 25, during which time there was no communication with Panama save by coasting steamers, which take ten days to make the trip. The board of health has since decided to receive all vessels "in strict quarantine." A copy of the regulations forwarded in this mail.

Health on vessels.—The sanitary condition of vessels and personnel clearing for ports in the United States or Panama which I have examined has been satisfactory. Several vessels plying between this and other ports, however, have developed quarantinable diseases on board.

April 10 steamship *Limari* was refused entrance here. She changed passengers with steamship *Tucapel* at Puna and returned south. After leaving Callao a passenger is reported to have died of plague. (Reported April 23.)

May 10 steamship *Loa*, from Panama, brought a passenger who developed yellow fever here next day. This was reported May 13, with attending physician's history of the case.

May 29 a cable was received here from Callao that the steamship *Aconcagua*, en route from Valparaiso to Panama, developed a case of plague on board. (Reported June 3.)

June 10 a cable was received from Callao that yellow fever occurred on board steamship *Guatemala*, en route from Panama to Valparaiso via this port. (Reported June 10.)

Sanitary condition of Guayaquil is much more satisfactory than when I arrived. A yellow-fever hospital has been established, streets and vacant lots

cleaned, a Clayton machine installed for fumigating vessels, grass and weeds cut, an attempt made to fill some of the lower parts of the city, places where water accumulated treated with coal oil; in short, a general attempt, on a modified scale, is being made to enforce some of the modern sanitary methods for the prevention of the spread of yellow fever.

Respectfully,

FLEETWOOD GRUVER,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

PERU.

CALLAO.

REPORT BY ASST. SURG. B. J. LLOYD.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

OFFICE OF MEDICAL OFFICER IN COMMAND.

Callao, Peru, July 14, 1904.

SIR: I have the honor to submit the following report of transactions at Callao, Peru, for the period April 16 to June 30, 1904:

Bills of health issued:

United States consular	7
Panama consular	11
Total	18

Vessels inspected:

For Panama	11
For New York	5
For San Francisco	2
Total	18

Vessels fumigated to kill vermin:

For Panama	11
For New York	5
For San Francisco	0
Total	16

Persons inspected:

For Panama and intermediate ports—	
Crew	768
Cabin passengers	421
Steerage passengers	381
Total	1,570

For New York—

Crew	201
Cabin passengers	6
Total	207

For San Francisco—

Crew	106
Steerage passengers	10
Total	116

Pieces of baggage disinfected:

For Panama and intermediate ports (estimated)	2,400
For New York	19
For San Francisco	12
Total	2,431

Facilities are inadequate for present work. The Peruvian Government maintains at the municipal disinfecting station a vacuum steam chamber for the disinfection of such articles as require to be disinfected by steam. Formaldehyde disinfection is performed in a room which can be hermetically sealed, the gas being generated from an autoclave. There are at present no bathing facilities for passengers and crew and no detention sheds.

There is an arrangement between the Office of the Public Health and Marine-Hospital Service and the Direction de Salubridad whereby the use of the disinfecting chambers and the services of the disinfecting force are available for the disinfection of baggage destined for ports in the United States and Panama.

So far the fumigation of vessels has been accomplished by the use of sulphur pots, but an efficient sulphur furnace is being installed. Other improvements are under consideration.

The hygienic laboratory in Lima is open to the officer of the Public Health and Marine-Hospital Service for bacteriological investigations.

The port and sanitary authorities have expressed their willingness to cooperate in the enforcement of sanitary measures.

Respectfully,

B. J. LLOYD, *Assistant Surgeon.*

The SURGEON-GENERAL.

BRAZIL.

RIO DE JANEIRO.

On account of the prevalence of plague and yellow fever in Rio de Janeiro and the large number of vessels that leave that port for ports in the United States, Acting Asst. Surg. W. J. S. Stewart was detailed by the President on October 30 for duty in the office of the United States consul-general at that port, under the act approved February 15, 1893. He inspects all vessels leaving Rio for United States ports and ports in Panama and signs the bills of health in conjunction with the consul. He makes weekly reports to the Bureau of the sanitary conditions in Rio and the neighboring cities on the Brazilian coast. These reports have been published regularly in the Public Health Reports.

The report of Acting Assistant Surgeon Stewart is herewith appended:

REPORT OF TRANSACTIONS BY ACTING ASST. SURG. W. J. S. STEWART.

RIO DE JANEIRO, BRAZIL, *July 4, 1904.*

SIR: I have the honor to make the following report of the work done at this port during the seven months ended June 30, 1904. As I arrived at this port during the last week in November, 1903, it is impossible to make this report embrace the full period of one year, there having been no representative of the United States Public Health and Marine-Hospital Service on duty in this consulate for some months previous to my arrival.

During this period this consulate has issued 78 bills of health to vessels sailing from Rio de Janeiro to United States ports and 1 bill of health to a vessel sailing from here to Cuban ports. Of this number, 33 were original bills and the remainder were supplemental bills issued to vessels touching here on their way to ports in the United States. To this latter class belong, without exception, all vessels carrying third-class passengers, as all passenger vessels consider Santos as the end and as the beginning of their voyages from and to New York or to New Orleans.

All these vessels to which bills of health were issued were inspected by me shortly before departure, and all crews and third-class passengers were also inspected by me on board ship, and since the last four months at my office in the consulate I have inspected all steerage for trachoma before any tickets are issued to them by the steamship lines.

The total number of persons inspected by me since November 1, 1903, is 3,146. This number is divided as follows: Officers and crews of vessels, 2,496;

first-class passengers from this port, 151; and third-class passengers from Rio de Janeiro, 490. At first glance the number of persons composing the crews of vessels looks rather large—i. e., for 78 vessels—but this is explained partly by the fact that 325 persons composed the crew of one vessel alone, an Argentine naval vessel—a training ship.

Since the steamship lines have referred intending steerage passengers to my office for examination for trachoma and other diseases before issuing them tickets I have there examined 139 such persons, rejecting for various causes 22.

This arrangement of examining intending passengers for United States ports is of considerable convenience to the steamship companies, and in the end saves them more or less money.

In all my work here I have great pleasure in saying I have in every way been aided by the officers of this consulate and by the managers of the various steamship lines.

Nine-tenths of all passengers, steerage and first class, are carried from this port to the United States by the ships of the Lamport and Holt Line. These ships, as a rule, are not very large, the two most popular ones, the *Byron* and the *Tennyson*, being of about 4,000 tons register, while the freight boats of this line, although carrying fewer passengers, are considerably larger in size, and are very comfortably fitted up for carrying passengers of both classes, and the food and water furnished the third-class passengers is excellent in quality and abundant in quantity. As I have said above, while the ships are not large, they compare most favorably with ships of much larger tonnage in all respects, and the emigrant who leaves here on one of them has but little to complain of.

The few other vessels that carry occasional steerage passengers to the States are for the most part freight boats, and their accommodations are very limited; but these vessels also furnish the emigrant with food in abundance and of good quality, and they have plenty of air space in their sleeping apartments, etc.

All the passenger boats of the Lamport and Holt Line and all the freight boats of this line that are fitted up for carrying steerage passengers in any quantity carry physicians, and as a rule they are men of good education and well qualified for the positions that they hold.

In all respects, therefore, the emigrant going from here to the States is well treated and cared for.

In respect to the sanitary conditions of this port, as a general thing, I would say as follows:

As I have in several of my sanitary reports already commented, one comes to the tropical or semitropical countries for the first time with an idea that they are hotbeds of all disease and veritable pest holes. Usually a period of a few months is sufficient to remove these ideas; and the question then comes, Why do not more deaths occur than do? Of course, one reason is the open-air, outdoor life that is led by people in the Tropics, for, as a rule, compared with our dwellings, even their houses are virtually "out of doors" inside. When I arrived here I naturally expected the summer time to be the period of the greatest mortality, and of course when yellow fever is epidemic to the extent that it often has been here such is the case. But this year the opposite has been the occurrence. The death rate during the months of November, December, January, and February was markedly lower and the real health conditions better than at present. Of course, in summer time many people go away to Petropolis and to other resorts not far removed from Rio, but the number, absolute number (for, of course, as regards one's acquaintances the number of persons leaving town for the summer may be very large), can make no appreciable difference in the number of persons remaining in a city of this size or as a consequence affect in any appreciable manner the death rate. Last week, ended July 3, 1904, the average number of deaths daily in this city, with its population of 650,000, was over 62. The summer showed—I pick up a weekly report at random, the one for the fifth week of this year—a daily average of 41.85; or, to go more fully into it, the daily average was as follows for the first ten weeks of the year, right in the very hottest part of the season here: 44.14, 42.14, 45.28, 53, 41.85, 45, 42.85, 47.28, 44.71, and 42.85.

These facts are a little astonishing, that in a hot country there should, as a matter of fact, be more deaths in the winter season than in the hot season; of course, always excepting the presence of yellow fever, which of course flourished more in hot weather than in cool seasons. At present the rapidly increasing epidemic of variola is one, and a great, cause of the increase in death rate

here, and this increase I imagine is largely due to the cool weather as a direct cause, by its compelling the people to crowd in their miserable and squalid homes, thus increasing the chances of the contagion. For the same reason one finds the plague more prevalent when the weather is cool, although as far as the plague here is concerned, it can, I think, now be regarded as no longer epidemic in any sense, only a few sporadic cases occurring from time to time. Whether or not it has become slightly endemic all along the coast of Brazil and in some portions of the interior time only will reveal. There is no doubt about the endemicity and, in many places, the epidemicity of variola. This has been the case here for many years and will continue, doubtless, to be the case for a long period, notwithstanding the excellent work of the various health departments in different cities, as long as there is the opposition to vaccination among the lower classes which has existed here for over a half century, and still exists most markedly in the interior districts, where it is looked upon, as is the plague and cholera in Asia, as the visitation of some deity, and therefore not to be contended with.

During the year 1903 there were in all 16,196 deaths from all causes. Inclusive of the causes of deaths given above there was the following classification of the deaths: Yellow fever, 584; plague, 359; variola, 805; measles, 73; scarlet fever, 4; whooping cough, 16; diphtheria and croup, 51; grippe, 490; typhoid fever, 106; dysentery, 59; beriberi, 109; leprosy, 20; erysipelas, 24; acute malarial fevers, 599; chronic malarial fevers, 167; tuberculosis (pulmonary variety), 2,747; tuberculosis (meningeal), 24; tuberculosis (other varieties than the two above named), 130; septicæmic infection (other than the puerperal variety), 109; hydrophobia, 2; syphilis, 75; cancers and other malignant tumors, 236; tumors, 4; other molesting growths, 167; diseases of the nervous system, 1,521; diseases of the circulatory apparatus, 2,077; diseases of the respiratory apparatus, 1,597; disease of the digestive system, 2,301; diseases of the urinary apparatus, 422; diseases of the genital organs, 11; puerperal septicæmia, fever, peritonitis, and phlebitis, 46; other accidents connected with the puerperal state from conception to parturition, 40; diseases of the skin and cellular tissues, 48; diseases of the organs of locomotion, 19; congenital debility and defects of conformation, 405; senile debility, 309; violent deaths (except suicides), 270; suicides, 60; diseases unknown or badly defined, 110.

If from this total number of deaths be removed the number of those occurring from yellow fever, 584; malarial fevers, 766; of which number it is easily to be supposed that a very considerable number were due to yellow fever and incorrectly diagnosed or reported, these two diseases giving a total of 1,320; from variola and plague, 1,164, making so far a grand total of 2,484; and lastly, from tuberculosis of all varieties, in number 2,901, in all a grand total from these five diseases of 5,385—if, I say, these numbers be subtracted from the whole number of deaths an excellent showing for the city is given, namely, only 10,811 deaths in a city whose population is at least 650,000 persons.

Were it not for variola the statistics of the present year when completed, should the same condition of health continue throughout this year as has been the case so far, would show a very different state of affairs. The campaign against yellow fever, more especially against the cause or the transmitting agent of this disease, the mosquito, has this year caused such a great diminution in the deaths from yellow fever and malarial affections that up to date there have been only 292 deaths from these two diseases in half a year against 1,320 in twelve months last year. Plague this year has caused 52 deaths in six months against 359 in twelve months of last year. These improvements in sanitary matters are not extended, however, to either tuberculosis or variola. As said above, the objection to and refusal of vaccination, so general here in all classes, still obtains, and as a consequence the colder season here this spring has had the result of an increase in variola. In regard to tuberculosis, the disease is so firmly fixed in this country, as everywhere else in the world apparently, that its early control is as problematical here as anywhere else.

There is a saying, an old proverb of the country, dating back to the early days when the Portuguese intermarried with their slaves, or at least had issue by the colored people of the country, to the effect that "if the father is a Portuguese or white man, and the mother is a negro, the son will be a mulatto, and the grandchild will be a tubercular child." This state of affairs has, of course, been increased by the freeing of the slaves and the very remarkable number of intermarriages with the negroes on the part of the white Portuguese or Brazil-

ians. The negro problem offers no difficulties in its solution in this country, as it is being rapidly solved by the absorption of the negro race by intermarriage. I believe that the statistics of some of the larger life insurance companies of the United States show it to be an almost certainly proven fact that the light-colored negroes or mulattoes are especially subject to tuberculosis, especially the pulmonary variety. Certainly such any one can see, even the casual observer, to be the condition of the mulattoes here in Brazil.

Since my arrival here the city has been very much improved in many ways. New and very sanitary street urinals and water-closets have taken the place of the old and stinking places in use a year ago. The new ones are constructed of iron, with cement floors, and are tiled and automatically flushed out, and above all have a man in charge all the time to see that no nuisances are committed and that they are kept clean, and besides this, they are regularly inspected and their condition reported upon. Hundreds of old and insanitarily constructed buildings, hundreds of excellent buildings also, have been torn down to make room for the new Avenida Central, which is to pass through the central portion of the city. This, as a matter of fact, has caused a tremendous amount of dirt and debris to be strewn around the city, and many of the people here think that this atmosphere of dust and plaster debris, in which a small part of the city is continually forced to live during the alterations and destructive process now going on, is responsible for the increase in the cases of variola. Possibly tuberculosis, but hardly variola one would imagine.

But at the completion of this work the city will have at least one fine modern wide street and several new parks and breathing places for the population.

New sewers of modern construction are being laid, and these things, in addition to the sanitary work reported to you by myself in the monthly reports from the health department, can give one some idea of the care now practised in this city by the health authorities. The regular systematic cleaning up of old localities where yellow fever has occurred in previous years, the drying up or oiling of all stagnant pools (they are always dried up and filled in where possible), the care taken to see that the many fountains and small lagoons in the picturesque squares and gardens of the city shall not become a breeding place for mosquitoes, as they undoubtedly were in previous years, the systematic removal of accumulated dirt from back yards and even house tops, the weekly cleansing of all water-closets by the health-board inspectors, the cleaning of all water containers of every sort, the cleaning of the sewers and conduits for rain water and the removal of accumulated filth therein, and the destruction of garbage, and, although not complete, the disinfection of a large portion of the sewage at the three central stations on the bay before pumping out the same into the bay, all these matters have wrought a very great change in the last twelve months in the sanitary conditions prevailing in Rio de Janeiro. To those who live here, or rather to those who have lived here for some years, the differences are of course most striking, and now even the fault-finders can only say that if the good system now in use "can only be kept up" there is some hope of this city losing the bad name for health which has always clung to it, like a bad name to a dog.

In addition to all these sanitary precautions, the care with which yellow-fever and malarial-fever patients are screened, as described to you in a report some months ago, has had the most beneficial results here, as in all other localities where this system of prophylaxis has been used. Reference is made above to the many fountains and small lagoons here in the public parks. They are strictly ornamental, and, with the swans and other waterfowl swimming thereon, very picturesque, but as a resting and breeding place for mosquitoes and their consequent larvæ nothing more suitable could be asked for. Heretofore, on account of the limited water supply, the water was often stagnant, even to the stage of masses of green scum floating on the top, and these conditions no one seemed to give any attention to until within the last year. Now all this is changed; the water is running all the time, and in many instances when I have carefully examined large surfaces of water, in no case have I ever seen any larvæ, and no more mosquitoes in the vicinity of these lakes than elsewhere. As a matter of fact, however, I have not been in the least troubled by mosquitoes during my stay here, in town or in the suburbs. I have caught at different times, however, a number of healthy-looking specimens of the *Stegomyia fasciata*, and also of several other varieties.

As I have written before now, many persons think that the port works now in

course of construction will be productive of a very large increase in the mortality from yellow fever. This I do not think to be the case, nor does Doctor Cruz, the health officer of the Republic, nor the French savants who came here to study yellow fever.

I refer, of course, to Doctors Marchoux and Simon. If the mosquito theory of yellow fever be correct—and it is past the experimental stage certainly—the dredging of a salt-water bay and the building of retaining walls and filling in with mud and sand from the bottom of the bay should not, with proper care to prevent the formation and stagnation of pools of water, forming breeding places for mosquitoes, be productive of yellow fever. At present all the work on the port works is confined to deep dredging. The mud, etc., from the bottom of the bay is loaded onto steam lighters and removed out to sea, where it is dumped automatically.

This procedure is to be continued until all the top layer of mud and debris from the bottom of the bay in the vicinity of the site for the retaining walls has been removed.

Then, after the walls are built, the idea is to fill in behind these walls with sand taken from underneath where the present dredging has been completed. In this way but little of the surface mud of the bay will find its way behind the walls. If feasible and practicable, this is certainly an idea which seems commendable, as the new ground will be formed of fairly clean material. There is no doubt that from the formation of this bay—in shape rather similar to that of the bay of Habana, landlocked all except one narrow entrance, and the dumping ground not only for most of the city's drainage and sewage, but also for the marsh mud for an area of hundreds of thousands of square miles, all the land around Rio being high, sloping down to the bay shores, and for a distance of from 1 to 20 miles from the foot of the mountains being nothing but marsh, flooded after heavy rains and at the time of very high tides, but reeking and stinking in the hot summer suns—from this character of formation the bottom of this bay must be formed of the collections and debris of centuries. Owing to the narrowness of the harbor mouth, the water of the bay is not frequently changed by additions of fresh sea water. After heavy rains, when the water from the swamps has drained down from the marshes into the bay, one often sees the whole appearance of the bay water to be changed. Ordinarily the color of the water is from bright blue, as in most tropical waters, to light blue and green, but at these times the whole bay appears to the observer to be from light to dark brown. On letting down a bucket and taking up this surface water it appears the same color in a glass, and is far from odorless, having a swampy smell; but at the same time if a bucket be sent down inverted and turned over at about 2 feet below the surface, the water then obtained will be clear in color and fairly free from any odor. This is something that I have never seen anywhere except here. This appearance of the bay is well known to the inhabitants of the city, who have their own name for it, and it has long been considered very dangerous to health to go in bathing or swimming there at such times.

It is, of course, due to the swampy water being washed down into the bay and to the slow change of the bay water, owing to the narrowness of the mouth of the bay.

In regard to the continuance of the plague in this city this will be borne out by what I said in my report to you of the 1st of May of this year. There continues to be sporadic cases, but as long as this disease is to all appearances firmly seated in so many of the Brazilian seaports, sporadic cases appearing from time to time, it is a condition of affairs only to be expected. That the epidemic is over here for the time being is, I hope, a fact, but a recrudescence of it at any time would not be a very surprising matter.

The health department certainly is exercising every care possible at their command, and their good work must tell.

So far there has been no particular sickness among the workers, either on the works of the port or on the part of those engaged in the construction of the Avenida Central, the new street referred to above, and this bears out the expressions of opinion on this matter given above.

Therefore in my opinion the health conditions are being improved daily, and I think that the next year's mortality records will bear me out in this forecast.

In every way, therefore, the city is being improved, and with the present very efficient head of the health department I think one may look for a very much better state of sanitary affairs in the future than in the past.

Before I bring this report to a close I must say a word in regard to the nature of the exports from here. The very great bulk of all cargo going from here is coffee, and next to that comes manganese ore, which is obtained from the State of Minas Geraes, to the north of Rio. A very few hides are shipped, in all since my arrival here but three small shipments. These hides are chemically cured, and the quarantine regulations have been observed in respect to the shipment of this class of cargo.

Besides these articles of commerce there is nothing exported worthy of comment. For the St. Louis exposition, of course, there were some shipments of miscellaneous cargo, but nothing of a quarantinable nature.

As you doubtless know, the coffee is carried by the Lamport and Holt, the Sloan, and the Prince lines, all of which lines have at least one steamer monthly to or from New York. Also coffee is carried by many tramp steamers, chiefly, however, of the better class. The only other regular lines running here are the Baltimore line of sailing vessels, owned and operated by C. Morton Stewart's Sons, of Baltimore, and a new line of steamers just formed to run from New York to the River Plate, stopping here both going and returning. Manganese is carried by any tramp steamer that may be available for cargo at the time a shipment is desired to be sent out.

In regard to sailing vessels, as I have often written before, it is in this class of vessels that whatever danger there may be to our home ports lies.

These vessels during the open season here—that is, during the fall and winter months—are allowed to come to the coffee docks. During the closed season no ships are allowed at the docks, whether sailing or steam vessels, except a line of coasting vessels which go to various ports of this country. When ships lie at the docks there at once is a suspension of discipline, partly from acquiescence on the part of the ship captains and consignees, but chiefly from necessity. The men will desert if a ship is alongside, and having deserted they go to all sorts of low dives in the poorer portions of the city and there run a much greater risk of infection of all sorts. Having deserted, it becomes necessary to fill their places with beach combers or anyone whom the captain can get. In many instances the people picked up here have been loitering around the town for weeks and months, and are the ideals as regards possibly infected men. This is not so in regard to steamers. This class of vessels rarely changes any of the crew personnel here, and never under any circumstances allows its crews to go ashore. This is a rule that is honored absolutely in its observance. And this, of course, makes this class of ships fairly safe.

However, the number of sailing vessels is very small as compared with the number of steamers, and even sailing vessels can only dock during six months of the year.

Altogether, neither the emigration from this port nor the character of the cargoes shipped to United States ports is a menace of much importance as regards the national health of the United States, and the former is true by reason chiefly of its small numbers, the River Plate region furnishing all steamers for New York with many more emigrants than Rio de Janeiro, and as long as the health of this city remains more or less uncertain perhaps this coincidence is a very happy one.

In my weekly reports of sanitary conditions in this city and vicinity I have dwelt so much upon many things that could well enter into a report like this that I will omit them in order to prevent repetition.

I think that the above will give the Bureau some idea of the character of the work to be done here and the prevailing conditions at this time. I am not over estimating the facts when I state that in my opinion the health itself of this city and the conditions upon which health is always contingent are improving from day to day, and the time is not far distant when this city will be no more of a menace to the United States than is Habana to-day.

Respectfully,

W. J. S. STEWART,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

HAWAII.

On March 3, 1903, an appropriation of \$80,000 for improvements was made, and the matter has been placed in the hands of the Super-vising Architect, and plans are now being prepared to carry out this work on the quarantine station at Honolulu.

HONOLULU AND SUPPORTS.

REPORT BY PASSED ASST. SURG. L. E. COFER.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Honolulu, Hawaii, July 11, 1904.

SIR: I have the honor to make the annual report of transactions at this station for the fiscal year ending June 30, 1904, as follows:

ROSTER OF OFFICERS AND MEN ON DUTY IN THE HAWAIIAN ISLANDS.

Passed Asst. Surg. L. E. Cofer, United States Public Health and Marine-Hospital Service, chief quarantine officer for the Hawaiian Islands.

Port of Honolulu.—Passed Asst. Surg. L. E. Cofer (in command), Passed Asst. Surg. W. C. Hobdy, Asst. Surg. R. L. Wilson, Acting Asst. Surg. A. N. Sinclair (suspended during May and June), Acting Asst. Surg. William F. James, Pharmacist Frank L. Gibson, Medical Inspectress E. F. Smith (suspended during May and June).

Port of Hilo, Hawaii.—Acting Asst. Surg. J. G. Grace.

Port of Kahului, Maui.—Acting Asst. Surg. John Weddick.

Port of Kihei, Maui.—Acting Asst. Surg. R. H. Dinegar.

Port of Lahaina, Maui.—Acting Asst. Surg. James Maloney.

Port of Koloa, Kauai.—Acting Asst. Surg. C. R. McLean.

Port of Mahukona, Hawaii.—Acting Asst. Surg. B. D. Bond.

DIVISION OF OUTGOING QUARANTINE.

The following circular letter shows the character of the work done in this division. These restrictions were in force on July 1, 1903, and were continued both at Honolulu and at Hilo until November 13, 1903:

RESTRICTIONS FOR BOTH STEAM AND SAILING VESSELS.

(1) Your vessel to lie not less than 6 feet from the dock at all times, with rat funnels and tar on all lines. Funnels to be not less than 3 feet in diameter. All ropes to be tarred for at least 2 feet immediately to the landward side of the funnels. Funnels to be so placed that they will be at least 6 feet from the wharf, from all other ropes, and from contact with anything whatsoever. Funnels must be kept stiffened, so that the rim of same is at all times equally distant from the line encircled.

(2) The gangway to be well lighted at night and a special guard (man) stationed there to prevent any rats from going aboard or coming ashore. When it is not practicable to have this gangway guard you will have the gangway raised clear of the dock at night by not less than 6 feet.

(3) All persons to be on board by 10 p. m. every night and to pass the rest of the night on board.

(4) This office must be notified of the intended shipment of all baggage and certain freight, as hides, scrap iron, household goods, and personal effects.

(5) All persons embarking at this port to be inspected immediately before sailing.

RESTRICTION FOR SAILING VESSELS ONLY IN ADDITION TO ABOVE.

(1) Must be fumigated unless they have laid either in the stream or at railroad wharf No. 2 during their entire stay in port. In the latter case there must be no contact with other wharfs or vessels.

(2) Must not lie at night alongside of interisland steamers.

(3) Crew must be inspected just before departure of vessel and crew's baggage must be disinfected at the United States quarantine wharf (Channel Wharf) the night before sailing day. After crew's baggage has been disinfected and returned aboard your vessel it must not be unsealed, unpacked, nor disturbed in any way until inspected by the officer in charge of outgoing quarantine business immediately before sailing.

(4) Masters must arrange personally for the disinfection of their vessels or else through their accredited commercial agents.

RESTRICTIONS FOR STEAMERS, IN ADDITION TO ABOVE, FOR BOTH STEAM AND SAILING VESSELS.

(1) An alphabetical typewritten list of cabin and steerage passengers, in duplicate, embarking at this port to be furnished the officer in charge of outgoing quarantine business two hours before sailing hour.

(2) On day of departure, as soon as hour for sailing has been determined upon, the officer in charge of outgoing quarantine business must be notified of such sailing hour.

(3) Steerage passengers and new crew to report at United States quarantine wharf, foot of Punchbowl street, at 9 a. m. on the day prior to the steamer's sailing day, bringing all baggage, after which permits for travel will be issued. Steerage passengers must have the final inspection at the gang plank upon the wharf and will not be permitted to embark carrying personal effects, as hand baggage, undisinfected.

Transactions at Honolulu.

Vessels disinfected.....	76
Vessels inspected and passed.....	127
Cabin passengers inspected and passed.....	1,129
Steerage passengers inspected and passed.....	1,447
Crew inspected and passed.....	1,814
Pieces of baggage disinfected.....	3,201
Passengers refused certification.....	22
Parcels of freight disinfected.....	878
Hides disinfected.....	10,831

Transactions at Hilo.

Vessels disinfected, then inspected and passed.....	10
Passengers inspected and passed.....	158
Crew inspected and passed.....	210
Pieces of baggage disinfected.....	192

Transactions in the division of the quarantine station proper.

Persons detained under observation.....	154
Persons bathed.....	329
Persons sick with quarantinable disease.....	3
Pieces of baggage disinfected.....	335
Pieces of freight disinfected.....	44
Persons vaccinated.....	153

Annual report of incoming transactions at Honolulu national quarantine station for the year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Steam vessels in- spected.....	21	17	21	17	20	31	22	16	18	17	31	20	251
Crew on steam vessels.....	2,689	2,382	3,072	2,235	3,219	6,301	3,041	2,282	3,346	2,223	6,539	2,724	40,103
Passengers on steam vessels.....	2,883	2,554	3,534	3,286	6,203	3,963	4,102	3,675	7,802	5,022	4,244	5,261	52,529
Sailing vessels in- spected.....	19	18	22	24	11	14	19	16	15	23	19	18	218
Crew on sailing vessels.....	274	303	334	352	239	200	289	235	258	343	271	256	3,344
Passengers on sailing vessels.....	18	25	26	31	6	13	8	9	13	23	25	29	236
Steam vessels dis- infected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Sailing vessels disinfected.....	1	0	1	0	0	0	0	0	0	0	0	0	2

Incoming quarantine transactions at the subports in the Hawaiian Islands.

	Hilo, Ha- waii.	Mahu- kono, Hawaii.	Kahului, Maui.	Lahaina, Maui.	Kihel, Maui.	Koloa, Kauai.
Steam vessels inspected and passed.....	7	0	3	0	0	0
Crew on steam vessels.....	199	0	108	0	0	0
Passengers on steam vessels.....	29	0	0	0	0	0
Sailing vessels inspected and passed.....	36	10	9	6	0	3
Crew on sailing vessels.....	457	86	125	83	0	27
Passengers on sailing vessels.....	112	0	8	0	0	1

Respectfully,

L. E. COFER,
*Passed Assistant Surgeon, Chief Quarantine Officer,
Territory of Hawaii.*

The SURGEON-GENERAL.

PHILIPPINE ISLANDS.

TRANSFER OF MARIVELES QUARANTINE STATION.

On May 21, 1903, Lieut. H. L. Wigmore, Corps of Engineers, aide-camp to the division commander, Philippines, addressed the following letter to Asst. Surg. Victor G. Heiser, chief quarantine officer of the Philippine Islands:

HEADQUARTERS DIVISION OF THE PHILIPPINES.
Manila, P. I., May 21, 1903.

To the Quarantine Officer for the Philippine Islands, Manila, P. I.

SIR: The division commander directs me to advise you that the limits of the Mariveles Military Reservation will be materially reduced and that the new reservation lines will not include the ground on which your corps is now located. Letters will be soon forwarded from this office requesting the reservation of land in accordance with the new lines. It is not known under what jurisdiction your corps holds its land in these islands, and for that reason this letter is written, in order that the necessary steps may be taken by your office to prevent the land you now occupy returning to the public domain.

Any assistance that can be rendered by this office will be cordially given.

Very respectfully,

H. L. WIGMORE,
First Lieutenant, Corps of Engineers, Aid-de-Camp.

Upon receipt of this letter Doctor Heiser wrote to Lieutenant Wigmore, as follows:

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF THE CHIEF QUARANTINE OFFICER
FOR THE PHILIPPINE ISLANDS,
Manila, May 25, 1903.

SIR: I have the honor to acknowledge with thanks the receipt of your letter of May 21, stating that the division commander directs you to advise this office that the limits of the Mariveles Reservation will be materially reduced and that the new lines will not include the ground on which our corps is now located, and that any assistance your office can offer will be cordially given. In view of the foregoing, and in order that there may be no injury to the public service during the period which will be required to settle the ownership of the land, I would respectfully request that you state in the papers about to be forwarded to the War Department at Washington that this office claims for the United States Public Health and Marine-Hospital Service the site upon which the present quarantine buildings at Mariveles are erected, as shown roughly by map No. 4240, United States Coast and Geodetic Survey, Manila suboffice,

December, 1901. In addition, all that point of land shown on above-described map which extends in a southeasterly direction from the Mariveles Quarantine Station and which is east of longitude $28^{\circ} 42' 38''$, line to commence at the junction of the above longitude and the present line of the south barbed-wire fence of the quarantine station. It being understood that such portions of this point of land be reserved by the War Department as are necessary for military purposes.

This last-described land was formerly part of the Spanish quarantine reservation. The same is a necessary adjunct to the station in order to serve as a burying ground, to furnish wood, sand, gravel, and other material which is constantly necessary for fuel, repairs, etc., to the quarantine plant.

The water rights of the present pipe and reservoir, which furnishes fresh water to the post and quarantine station, are also claimed in case the army evacuates the land over which it runs.

In connection with reserving the land rights, it would also be well to have the quarantine anchorage for vessels definitely fixed.

I have written the Surgeon-General of the United States Public Health and Marine-Hospital Service a letter which embodies the foregoing facts, and I would therefore respectfully suggest that, if agreeable to you, that you so arrange your papers that this matter can be finally settled at Washington between the War and Treasury Departments, and that until such settlement takes place that the claims of this office, as roughly outlined above, be respected.

I should like to have your views as to whether it would not be well to have an accurate survey of the proposed quarantine reservation accompany the papers and as to how this survey could be obtained.

Respectfully,

VICTOR G. HEISER,

Assistant Surgeon,

Chief Quarantine Officer for the Philippine Islands.

Lieut. H. L. WIGMORE.

Aid-de-Camp to the Division Commander, Manila, P. I.

WAR DEPARTMENT,
OFFICE OF THE JUDGE-ADVOCATE GENERAL,
Washington, April 7, 1904.

SIR: I have the honor to inclose a copy of General Orders, No. 56, War Department, March 25, 1904, announcing the reduction, by Executive Order of March 14, 1904, of the military reservations made by Executive Order of April 11, 1902, at the entrance to Manila Bay, Luzon, Philippine Islands. This reduction excludes from the military reservation on the north side of the entrance to Manila Bay—i. e., the Mariveles Reservation—the lands now occupied, as well as any additional lands that may be desired as a site for the quarantine station.

As it is thought that the Treasury Department may desire to have such lands reserved for quarantine purposes I inclose letters, or copies thereof, between the military authorities and the quarantine officer regarding this matter, together with a description of the lands desired for quarantine purposes, and a blueprint showing the location of the same with reference to the reduced military reservations.

ROBERT SHAW OLIVER,

Acting Secretary of War.

THE SECRETARY OF THE TREASURY.

TREASURY DEPARTMENT,
April 22, 1904.

SIR: Referring to your letter of the 7th instant, inclosing copy of General Orders, No. 56, of the War Department, March 25, 1904, announcing the reduction, by Executive Order of March 14, 1904, of the military reservations made by Executive order of April 11, 1902, at the entrance to Manila Bay, Luzon, Philippine Islands; also inclosing copies of the correspondence between the military authorities and the quarantine officer of the Philippines regarding this matter, together with description of the land desired for quarantine pur-

poses, since it is thought that the Treasury Department might desire to have these lands reserved for quarantine purposes, I have the honor to inform you that the Surgeon-General of the Public Health and Marine-Hospital Service states that nearly all of the part of the land described in the papers within is now used as quarantine station, and that it would be very desirable to secure the land in the proper way for the Public Health and Marine-Hospital Service, to be used as a quarantine station for Manila Bay.

I have, therefore, to request that, if it meets with your approval, such action as may be necessary be taken to secure such part of the within-described reservation for the use of a quarantine station under this Department.

The papers referring to the case are herewith respectfully returned.

Respectfully,

H. A. TAYLOR,
Acting Secretary.

The SECRETARY OF WAR.

WAR DEPARTMENT.
Washington, May 2, 1904.

SIR: In compliance with your request, dated April 22, 1904, the order of the President, dated April 29, 1904, has been obtained making the reservation of the lands desired for the Mariveles Quarantine Station, and I have the honor to transmit said order, and to return for file therewith the papers received with your letter.

Very respectfully.

ROBERT SHAW OLIVER,
Acting Secretary of War

The SECRETARY OF THE TREASURY.

[Inclosure.]

WAR DEPARTMENT,
Washington, April 28, 1904.

By Executive order, dated March 14, 1904, published in General Orders, No. 50, War Department, March 25, 1904, the military reservation, made by Executive order of April 11, 1902, on the north side of the entrance to Manila Bay, in the province of Bataan, Luzon (the Mariveles Reservation), was reduced so as to exclude, inter alia, the lands occupied by the Treasury Department for quarantine purposes. The Secretary of the Treasury was advised of this reduction, and in accompanying letter, dated April 22, 1904, he requests that such action be taken as may be necessary to secure the lands hereinafter described for the use of a quarantine station under the Treasury Department.

I have the honor, therefore, to recommend the reservation for the Mariveles Quarantine Station, situated on the north side of the entrance to Manila Bay, in the province of Bataan, Luzon, of all lands included within boundaries described as follows, viz:

"Beginning at a point on the low-water line of Mariveles Bay, on prolongation of the northeastern boundary line of quarantine station, as now inclosed by barbed-wire fence, and running thence north 72° 05' west a distance of 185 feet more or less to the northeastern corner of said wire fence; thence along said wire fence north 72° 05' west a distance of 187 feet to corner; thence along fence north 36° 23' west a distance of 166.67 feet to corner; thence along fence south 30° 07' west a distance of 106.25 feet to corner; thence along fence south 71° 07' west a distance of 90.58 feet to corner; thence along fence south 21° 07' a distance of 644.1 feet to corner; thence along fence south 20° 29' east a distance of 71.75 feet to corner; thence north 88° 07' east a distance of 29.25 feet to a stake set 3.33 feet from wire fence; thence due south across Tucot River and Peninsula to a point at low water on the China Sea; thence along said low-water line in a general southeasterly direction to Cochinos Point; thence in a general northwesterly direction along low-water line of Mariveles Bay to mouth of Tucot River; thence across mouth of said river and along low-water line of Mariveles Bay in a general northerly direction to point of starting."

There is also reserved for the quarantine station the water rights for the maintenance of the present pipe and reservoir which furnish fresh water to said station, with perpetual easement over lands not included in the quarantine or

military reservation for their maintenance and repair, so far as such rights do not pertain to the reduced military reservation.

Very respectfully,

ROBERT SHAW OLIVER,
Acting Secretary of War.

The PRESIDENT.

WHITE HOUSE, April 29, 1904.

The within recommendation is approved, and the reservation is made accordingly.

T. ROOSEVELT.

[Letter.]

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, May 6, 1904.

SIR: I have to inclose for your information copy of Executive order, dated April 29, 1904, setting aside the reservation of the Mariveles Quarantine Station, situated on the north side of the entrance of Manila Bay, of all the lands included within the boundaries described in the paper mentioned.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

Passed Asst. Surg. VICTOR G. HEISER,
Chief Quarantine Officer, Manila, P. I.

DECISION OF THE SOLICITOR OF THE TREASURY THAT VESSELS FROM PORTS IN THE UNITED STATES ARRIVING AT PORTS IN THE PHILIPPINE ISLANDS ARE NOT REQUIRED TO CARRY BILLS OF HEALTH.

[Letter.]

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY,
Washington, July 28, 1903.

SIR: I have to acknowledge the receipt of your reference of a letter of the assistant surgeon and chief quarantine officer for the Philippine Islands, who wishes to be informed whether a bill of health can be demanded from vessels arriving from United States ports. You request that the question be referred to the Solicitor of the Treasury for an opinion. In reply find opinion of the Solicitor, who decides that bills of health can not be demanded of vessels arriving in those islands from the United States.

The letter of the assistant surgeon is returned herewith.

Respectfully,

L. M. SHAW, *Secretary.*

SURGEON-GENERAL,
Public Health and Marine-Hospital Service.

[Inclosure.]

DEPARTMENT OF JUSTICE,
OFFICE OF THE SOLICITOR OF THE TREASURY,
Washington, D. C., July 27, 1903.

SIR: Assistant Secretary Armstrong, by indorsement of the 25th instant, requests my opinion upon the question whether bills of health can be demanded from vessels arriving in the Philippine Islands from the United States.

In reply I have to inform you that the act of February 15, 1893, section 2, as amended by the act of August 18, 1894 (28 Stat., 372), provides that "any vessel at any foreign port clearing for any port or place in the United States" shall be required to obtain a bill of health from the consul of the United States at the point of departure, or from the medical officer detailed to serve in the office of the consul.

As it is plain from the reading of this act that bills of health can be fur-

nished only by consular officers of the United States in foreign ports, or by the medical officer detailed to serve in the office of the consul, and that there are no officers in the ports of the United States from whom such a bill of health could be procured, I have to advise you that bills of health can not be demanded of vessels arriving in those islands from the United States.

The letter inclosed to me is herewith returned.

Very respectfully,

MAURICE D. O'CONNELL, *Solicitor.*

The SECRETARY OF THE TREASURY.

CORRESPONDENCE IN REGARD TO COMMUTATION FOR QUARTERS ALLOWED
OFFICERS OF THE SERVICE ON QUARANTINE DUTY IN THE PHILIPPINES.

[Letters.]

U. S. TREASURY DEPARTMENT,
PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE CHIEF QUARANTINE OFFICER FOR THE PHILIPPINE ISLANDS,
Manila, P. I., July 31, 1903.

SIR: I have the honor to report that the Philippine Commission has refused to appropriate money to meet the bills for the first half of the fiscal year 1904, which will be rendered by the officers on duty in the Philippines in accordance with paragraph 98 of the Regulations of the Public Health and Marine-Hospital Service.

Upon the receipt of a copy of act No. 807, entitled, "An act making appropriations for sundry expenses of the insular government for the fiscal year ending June thirtieth, nineteen hundred and four, and other designated periods," I wrote a letter to the Philippine Commission (copy inclosed) calling attention to the fact that the amount allowed by them for commutation was not in accordance with paragraph 98, and requested that the amount submitted in the original estimate be allowed. I also called upon Governor Taft in person and he informed me that the action in appropriating the amounts given in act 807 was done with the full knowledge that it was not in accordance with paragraph 98 of the Regulations of the Public Health and Marine-Hospital Service, and that it had also been decided that the matter should come to an issue. Accordingly, I have this day cabled the following message:

" SECRETARY TREASURY (through Wynian):

" Protest action Commission refusing allow commutation paragraph 98.

" HEISER."

The officers on duty here have refused to receive the amounts allowed by the Commission, because they fear that they would jeopardize their legal claim to the commutation at the rate allowed them by paragraph 98.

I would respectfully request that this matter receive immediate attention. The cost of living here is very high, and the married officers will be unable to meet their ordinary living expenses with their salaries. It is most unjust to expect them to work for the compensation and allowances the Commission proposes to give them. The insular government has experienced great difficulty in obtaining medical officers at \$2,500 per annum, and heads of divisions are offered \$3,500. Our officers feel that the self-sacrifice and the enormous amount of work done in combating the cholera epidemic has not been appreciated. Even with the salary and allowances as paid in the past, they are the poorest compensated medical men in the insular service, considering the work done.

The official records of the board of health show that out of 8 medical officers employed only 2 are from the Army, who receive, in addition to their army pay, \$5 and \$8 per diem, respectively. The remaining 6 are paid entirely from insular funds: 2 receive \$3,500 per annum, and 4 \$2,500. It will therefore be seen that none receive less than the Public Health and Marine-Hospital Service officers, and the majority receive far more.

A copy of all correspondence is inclosed.

Respectfully,

VICTOR G. HEISER.

Assistant Surgeon, Chief Quarantine Officer for the Philippine Islands.

To the SURGEON-GENERAL.

WAR DEPARTMENT, BUREAU OF INSULAR AFFAIRS.

Washington, D. C., August 27, 1903.

SIR: To confirm our several conversations on this subject, I have the honor to inform you that on July 11 the Secretary of War received a cablegram from the civil governor of the Philippine Islands stating that the Philippine Commission was indisposed to allow commutation of quarters to quarantine officers at rates named by Treasury regulations, assistant surgeons' commutation exceeding that of major-general, and that commutation for officers six months is \$3,720. The Commission requested an expression of opinion from the Secretary of War relative to reducing the rates to a reasonable amount, stating that naturally the power of the Commission to reduce the allowance or furnish quarters in kind was clear. On July 17 the Secretary of War replied to Governor Taft, directing that in making allowance for commutation of quarters the Philippine Commission exercise their discretion, and if the Treasury Department objected to the amounts allowed that the War Department would take up the matter with the Treasury Department.

An extract from a cable received August 1 from the civil governor of the Philippines is as follows:

"Forward following from chief quarantine officer, Secretary of the Treasury, through Wyman:

"Protest action Commission refusing to allow commutation, paragraph 98.

"HEISER."

Very respectfully,

CLARENCE R. EDWARDS.

Colonel, U. S. Army, Chief of Bureau.

HON. WALTER WYMAN,

Surgeon-General, Public Health and Marine-Hospital Service.

TREASURY DEPARTMENT.

BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

Washington, August 31, 1903.

SIRS: I have to acknowledge receipt of your letter of August 27, stating that on July 11 the Secretary of War received a cablegram from the civil governor of the Philippines informing him that the Philippine Commission was indisposed to allow commutation of quarters to quarantine officers at rates named by the Treasury Regulations, etc.; also that on July 17 the Secretary of War replied to Governor Taft, directing that in making allowance for commutation of quarters the Philippine Commission exercise their discretion, and if the Treasury Department objected to the amounts allowed, that the War Department would take up the matter with the Treasury Department. Your letter also contains an extract of a cable of August 1 from the civil governor of the Philippines forwarding the protest of Passed Assistant Surgeon Heiser, chief quarantine officer, against the refusal of the Commission to allow commutation as provided in paragraph 98 of the Regulations of the Public Health and Marine-Hospital Service.

One reason given for the action of the Commission is that the assistant surgeon's commutation exceeds that of major-general. With reference to this matter I beg leave to inclose herewith circular No. 132, November 9, 1890, fixing the rate of commutation for officers on duty at foreign ports and at any port beyond the geographical limits of the United States as they existed January 1, 1898, said circular being approved by the Secretary of the Treasury and by the President. The provisions of this circular have been enacted into law by the act of Congress approved July 1, 1902, entitled "An act to increase the efficiency and change the name of the Marine-Hospital Service."

The object of increasing the commutation of officers on detail in tropical ports was simply to increase their compensation, inasmuch as the salaries are fixed by law and there is no other way in which increase of compensation, which is necessary under these circumstances, can be provided.

It is understood that some provision of law does exist by which army and naval officers are allowed increased compensation when serving outside of the United States. If I mistake not, it is an allowance of 10 per cent of their salary additional thereto. No such provision exists for the officers of the Pub-

the Health and Marine-Hospital Service, their salaries remaining the same as though they were serving in the continental United States. Moreover, if I am informed correctly, officers of the Army or Navy serving the Philippine government in charge of bureaus are allowed \$4 to \$5 per diem in addition to their regular army and navy salaries. So that the total compensation of the officers of this service serving in the Philippines, as compared with that of officers of other branches of the United States Government, is no greater, and in fact it is believed is still somewhat less.

With this explanation, I trust that the Philippine Commission will see fit to allow the commutation as provided for by the United States laws and regulations governing the service.

Respectfully,

WALTER WYMAN,
Surgeon-General.

Col. CLARENCE R. EDWARDS, U. S. Army,
Chief Bureau of Insular Affairs, War Department,
Washington, D. C.

[Copy of letter from executive secretary, with resolution of the Philippine Commission to restore the allowance for commutation for quarters to officers of the Service.]

GOVERNMENT OF THE PHILIPPINE ISLANDS,
EXECUTIVE BUREAU,
Manila, November 4, 1903.

SIR: I have the honor to inform you that correspondence, forwarded by the chief of the Bureau of Insular Affairs, with reference to commutation of quarters for members of the Marine-Hospital Service serving in the Philippine quarantine service was submitted to the Philippine Commission at its session of November 2, 1903. After full consideration of all the correspondence and of the recommendations of the civil governor in his indorsement upon the papers, the following action was taken:

"On motion, *Resolved*, That in the next appropriation bill the commutation of quarters provided in the regulations applicable to the Marine-Hospital Service be restored for the officers of the Marine-Hospital Service detailed to the Philippine quarantine service."

Very respectfully,

A. W. FERGUSSON,
Executive Secretary.

The CHIEF QUARANTINE OFFICER, *Manila, P. I.*

INSTRUCTIONS TO OFFICERS IN ORIENT TO COOPERATE WITH CHIEF
QUARANTINE OFFICER OF PHILIPPINES.

At a meeting of the sanitary board of the Public Health and Marine-Hospital Service, held at the Bureau on September 24, 1903, it was recommended that the following instructions be issued to regular officers of the Service in Japan and China:

In view of the fact that epidemic diseases prevail in most ports in China and Japan, causing danger to the Philippine Islands from the proximity of these places, it is of paramount importance that you exercise every vigilance relative to steerage passengers and cargo, as well as to the vessels themselves, that sail from your port to the Philippine Islands during the prevalence of quarantinable diseases at the port of departure, and you are instructed as follows:

"Send a copy of the weekly report made to the Bureau direct to the chief quarantine officer of the Philippine Islands relative to the sanitary condition of your port and of the prevalence of quarantinable diseases, and in the event of an epidemic disease appearing at your port or vicinity promptly notify the chief quarantine officer at Manila of this fact by cable. Furthermore, cooperate in every manner possible with the chief quarantine officer of the Philippine Islands and carry out, so far as practicable, such regulations concerning the disinfection of ships, passengers, and certification of cargo as may be required for the purpose of expediting the entrance of these vessels upon arrival at the Philippine ports."

The following letter of instructions was issued to all officers of the Service stationed in China and Japan.

[Letter of instructions.]

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, October 24, 1903.

Passed Asst. Surg. JOHN McMULLEN,
Public Health and Marine-Hospital Service, Hongkong, China.

SIR: A copy of the recommendations made by the sanitary board of the Public Health and Marine-Hospital Service, convened at the Bureau on September 24, 1903, to consider the best plan for cooperation between the officers of the Service stationed at the different ports in the Orient and the chief quarantine officer of the Philippines to protect the Philippines from the epidemic diseases that prevail in most of the ports in China and Japan, is inclosed for your information and guidance, and you are directed as far as possible to carry out these recommendations when granting bills of health to vessels leaving your port for ports in the Philippine Islands.

You will acknowledge receipt of this letter.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

MILITARY SERVICES OF ASST. SURG. M. K. GWYN.

HEADQUARTERS DEPARTMENT OF MINDANAO,
Zamboanga, P. I., November 28, 1903.

SIR: Attention is invited to the valued cooperation of Asst. Surg. Matthew K. Gwyn, Public Health and Marine-Hospital Service, during the recent operations on the island of Sulu. This officer offered his services as a medical officer when the troops landed on the beach near Slet Lake, and remained on duty with the column commanded by Lieutenant-Colonel Scott until Colonel Scott was wounded, when he returned to Jolo with the Colonel, dressed his wounds, and cared for him until the return of Captain Lewis, post surgeon. This officer's service was most efficient while with the fighting column, and his presence was fortunate at the time Colonel Scott was wounded, as that column would have been left without a medical officer if Captain Lewis had returned to Jolo without a medical officer.

The entire Army should appreciate Doctor Gwyn's skilled attentions to Lieutenant-Colonel Scott.

Very respectfully,

EDGAR A. MEARNES,
Major, Surgeon, U. S. Army,
Chief Surgeon of Jolo Expedition.

The CHIEF OF STAFF,
Headquarters Department of Mindanao, Zamboanga, P. I.

[First indorsement.]

HEADQUARTERS DEPARTMENT OF MINDANAO,
Zamboanga, P. I., November 30, 1903.

Respectfully forwarded to the Surgeon-General Marine-Hospital Service, Washington, D. C., through military channels. I thoroughly appreciate Doctor Gwyn's services, and concur in all that Major Mearns says of him.

LEONARD WOOD,
Major-General, Commanding.

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, D. C., January 29, 1904.

Respectfully forwarded to Asst. Surg. Matthew K. Gwyn, Public Health and Marine-Hospital Service, Jolo, P. I., through chief quarantine officer, Manila, P. I.
WALTER WYMAN, *Surgeon-General.*

MANILA AND SUBPORTS.

REPORT BY ASST. SURG. VICTOR G. HEISER, CHIEF QUARANTINE OFFICER.

U. S. TREASURY DEPARTMENT,
PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE CHIEF QUARANTINE OFFICER FOR PHILIPPINE ISLANDS,
Manila, P. I., August 4, 1904.

SIR: In accordance with the instructions contained in Bureau circular letter of March 18, 1904, I have the honor to make the following report of the transactions of the Service in the Philippine Islands for the fiscal year ended June 30, 1904.

The past year has been one of heavy responsibility for the officer in charge of quarantine matters in the Philippines. There has been no time to speculate and theorize upon theoretical conditions. The islands have been practically surrounded by countries in which quarantinable diseases were either prevalent in epidemic or endemic form and with which constant communication has been maintained by swift vessels. The port of Hongkong, at which plague has been continually present for many years, and which, in more recent times, has been visited yearly by cholera, is only two days' steaming distance from this port. Vessels arrive from there almost daily. Owing to the fact that most of the food stuffs and other supplies must be regularly imported, one of the first requisites of any quarantine measure must be that communication can be carried on without placing such restrictions upon commerce as to make it prohibitive. The business of the islands is largely maritime and any incumbrance placed upon it is severely felt throughout the islands. It is, therefore, very satisfactory to report that the Philippines have been successfully protected during the year from the entrance of quarantinable diseases, and, at the same time, with practically no interference with shipping. Instead of being a hindrance to commerce, the enforcement of rational sanitary measures with regard to vessels has become so well recognized as being beneficial that objections are no longer made and in many instances the masters of vessels request them. The sanitary work done in the Philippine Islands has been favorably commented upon throughout the civilized world, and so well is its efficiency regarded that a vessel that holds a good health certificate from the Philippine Islands is now granted unconditional pratique in nearly all ports of the world. Japan has lately granted the same privileges to vessels that come from the Philippine quarantine stations as though they had passed through the Japanese quarantine.

This change in the attitude of other countries toward vessels from the Philippines is very gratifying and can not help but be of great benefit to Philippine commerce.

During the year cholera has occurred in the principal ports along the entire eastern coast of Asia, from Japan to the Straits Settlements. Plague has prevailed in epidemic form to the north of us in Formosa, and in Australia, to the south of us. It speaks volumes for sanitary science that business has been carried on with these countries in an uninterrupted manner without a single case of quarantinable disease being imported into the Philippines. Actual results of this nature mean much to the islands in a commercial way in demonstrating that people can live here with the same security from contracting quarantinable diseases as they would enjoy by residing in the United States.

A particularly fortunate feature of the sanitary situation has been that it has been possible to safeguard the islands against the importation of disease without interfering in an undue manner with commerce. The restrictions in force have all been of such nature that there has been very little delay to shipping and little expense involved in carrying them out.

In addition to the strictly professional duties, the chief quarantine officer has had charge of the quarantine appropriation, which amounted to \$117,500 United States currency. The economical administration of this fund required a great amount of painstaking labor. The responsibility of passing upon the necessity and legality of the expenditures and arriving at results that would be satisfactory to the Bureau as well as the insular government has been very great.

The great distance of this station from Washington and great cost of cable messages has made consultation with the Bureau practically impossible. This office, therefore, has often been deprived of valuable advice, many knotty problems have had to be solved alone, and the full responsibility assumed.

It is with much pleasure that I report that pleasant relations exist between the shipping interests, the Army, the Customs Service, and the insular government in general.

PERSONNEL.

Passed Asst. Surg. Victor G. Helser, chief quarantine officer for the Philippine Islands.

Manila: Passed Asst. Surg. Victor G. Helser, in command; Asst. Surgs. John D. Long and R. H. Creel; Pharmacists N. C. Comfort and Charles R. McBride. Mariveles: Asst. Surgs. Charles W. Vogel and H. M. Manning.

Iloilo: Asst. Surg. George W. McCoy.

Cebu: Asst. Surg. Carroll Fox.

Jolo: Asst. Surg. M. K. Gwyn.

Seventy more persons are employed by the Service who perform the duties of clerks, disinfectors, vaccinators, etc.; total personnel, 78.

The work of the year has been very heavy and of a most trying character. Asst. Surg. H. A. Stansfield, who had already been in the islands for over three years, performing duty of the most arduous character, broke down completely from the strain. He was subsequently relieved by the Bureau from further duty in the Philippines. The effect of the continuous responsibility which the officers stationed at the outlying ports are compelled to bear, coupled with the fact that they are on duty every day, holidays and Sundays included, from daylight to sundown, without being relieved occasionally for even half a day, which, added to the enervating influence of the climate and difficulty of dealing with a population that speaks a foreign tongue, makes the detail in the Philippines a particularly trying one. It has been the endeavor, so far as practicable, to select officers in turn for the special details which arise from time to time, thus relieving them occasionally from the continuous boarding duty.

The Service has cause for congratulation in the faithful and uncomplaining manner in which its officers and employees have performed their work in the Philippines. I would respectfully suggest that it would add much to the contentment of the officers if they could be on a sure and certain footing in the islands with regard to the length of their detail. Since the Service officers come in contact with very few white persons outside of the Army, the practice followed by the latter is constantly before them. Army details in the Philippines are two years for line officers and three years for staff officers. The detail of a naval officer, medical or otherwise, in the Philippines is for two years. It would therefore be more satisfactory to our officers if they also could look forward to a definite date at which their tour of duty would be accomplished.

VESSELS BOARDED.

There were 4,080 vessels boarded at the port of Manila and 7,764 at the other three ports of the islands at which the Service has officers stationed.

VESSELS DISINFECTED.

Two hundred and three vessels were disinfected. Of this number 167 were disinfected at the Manila station. Fifty-eight vessels were disinfected because cases of quarantinable diseases were found on board on arrival. The balance were either disinfected because they came from infected ports, or at the request of the board of health on account of being infected with rinderpest or other cattle diseases.

VESSELS FUMIGATED.

Four hundred and thirty-two vessels were fumigated with sulphur to kill rats and other vermin aboard. The vessels ranged in size from the largest steamers that are found on the Pacific Ocean to the smallest sail vessel. It is impossible to estimate the amount of good that this fumigation has accomplished. In many cases it must undoubtedly have prevented the transmission of disease, to say nothing of the great amount of actual comfort that has been afforded the traveling public and the crews. Vermin naturally propagates much more abundantly in tropical climates than in temperate ones. This is

especially true on board vessels, and unless means are taken to exterminate it from time to time the amount of vermin is only limited by the obtainable food supply. The discomfort which is caused by bedbugs, roaches, etc., can well be imagined. That vermin is largely concerned in the transmission of disease there is no longer any doubt. From the sanitarian's standpoint, it is almost a fortunate thing that vermin is also a source of annoyance to the traveling public, because the measures which he uses to destroy it then receive the hearty support of the shipping interests. Thus it has become possible to fumigate all vessels without causing friction. The great importance of this fact will be appreciated when it is remembered that no permanent sanitary advancement can be made unless the measures have the support of the public.

In the fumigation of this large number of vessels the pot method was used almost entirely, because it was found much more satisfactory than the regulation sulphur furnace and many times more economical. The penetrability of sulphur gas generated in pots set in water is much greater than that generated in the sulphur furnace. It is not my purpose to enter into a technical discussion here of the relative merits of the two systems, but only to point out that the pot method has proven very successful and that, owing to the simplicity of its operation, there is no reason why it should not be used at all foreign ports where the Service has officers stationed and where it may be required.

CHOLERA.

This year has seen what is generally believed to be the complete cessation of cholera throughout the islands. The last case was reported in Manila February 20, 1904. The last case reported in the provinces was on April 18, 1904.

During the fiscal year there have been 600 cases with 542 deaths reported in the city of Manila. Twenty-three thousand, two hundred and thirty-three cases and 18,369 deaths were reported in the provinces. Thus has ended one of the most devastating epidemics, with the exception of the plague in India, which has affected man in recent times. In round numbers there have been more than 300,000 deaths. Actually, over one-twentieth of the population was destroyed in a little over a year by this one disease alone. Since we know that the disease is introduced into a community only by another case, by water, or by certain food products, it will be seen that it is possible to prevent its re-introduction, but since communication is indispensable it will also be apparent that the quarantine officer assumes a tremendous responsibility in attempting to regulate the shipping which arrives here from ports infected with cholera. In connection with the recent outbreak of cholera on the eastern coast of China an interesting question has presented itself here. Did cholera finally extinguish itself here because all the available material was used up, or because the organism had become so attenuated that it was no longer able to convey cholera to an individual? If the former was the case, there was not much danger to be apprehended in the Philippines by the outbreak of the disease in Hongkong and Saigon. If the latter was the case, the introduction of a case of cholera into the islands was of the gravest import. In the absence of definite information to the contrary the latter was assumed to be the case and those parts of the quarantine regulations which were applicable were enforced. An important fact brought out by the recent epidemic was that the incubation period was very rarely found to be more than forty-eight hours. With this in mind when the cholera again made its appearance in Hongkong last May the following action was taken: In addition to the measures imposed upon vessels at Hongkong by the Service officer stationed there vessels are required to call at Mariveles, where a thorough inspection is made and any additional disinfection that is necessary is done. The inspection at Mariveles also affords an excellent opportunity to search for fresh vegetables and other prohibited articles that may have gotten aboard unauthorized. Upon the completion of the inspection, if everything is found satisfactory, the vessel proceeds to Manila without detention. It is believed that by this method of treating Hongkong vessels the islands are as efficiently safeguarded against the invasion of cholera as by a five-days' quarantine, and the losses and annoyances to the shipping interests are reduced to a minimum. An administrative detail that has been of the greatest assistance in dealing with vessels from infected ports was the carrying into effect a regulation that nothing other than articles actually on the cargo manifest should be removed from the vessels while in the ports of the Philippines unless written authority was obtained from the quarantine officer. By this method

many suspected things were prevented from landing, and especially was this true of ships' stores. The Customs Service has been of the greatest assistance to us in carrying this regulation into successful effect.

At Cebu at the beginning of the fiscal year the cholera again became so severe that it was deemed necessary to institute a partial outgoing quarantine. Accordingly Asst. Surg. Carroll Fox, the officer in command at Cebu, issued a circular letter stating that beginning with July 1 it would be necessary for all steerage passengers who desired to leave Cebu by boat to first undergo a quarantine detention of five days. During the early part of August the situation was so much improved that on August 10 the quarantine was lifted.

In the latter part of August the village of Mariveles (population about 1,000), at which is also located the Mariveles Quarantine Station, after enjoying entire freedom from cholera since the beginning of the epidemic, became infected. The labor supply for the station is drawn from this village, and it was therefore necessary to take all precautions to prevent the station from becoming infected, because this would have seriously affected the efficiency of the quarantine station at a time when its uninterrupted operation was essential to the health of the entire island.

The importance of this matter was appreciated by the insular health authorities and the Army. The Service cooperated with the foregoing officials, and in a few days the disease was under entire control and by September 12 no further cases occurred. Total number of cases 12, with 5 deaths.

Investigation showed that the disease was not introduced into the village from the quarantine station. Coincident with the outbreak of the disease the population of the village was augmented by the arrival of 300 stevedores, who remained there permanently to coal the army transports. In the desire of the local merchants to enter to the wants of this increased population a supply of vegetables from Manila was obtained and with it, in all probability, the cholera. Cases were immediately isolated and the premises disinfected. The stevedores were placed in a camp by themselves, a rigid daily inspection made of all persons, and all suspicious cargo was refused landing. The water supply being above suspicion, these measures speedily accomplished the eradication of the disease. It was an excellent illustration of what may be accomplished by sanitary science when the proper means are at hand for its application. The maritime quarantine inspection at Mariveles of vessels from Manila was maintained until the cessation of the disease at Manila, and it was completely successful.

In the early part of September there was suddenly a decided increase in the number of cholera cases in Manila. For the week ended September 12, 1903, instead of the usual number of from 18 to 25 cases per week, there were 79 cases and 63 deaths reported. The increase was soon traced to some fresh water which bubbled up through the salt water of the bay at a point just off the Tondo district. The fact that fresh water could be dipped from a salt water bay was regarded as a miracle by the natives and they flocked there in great numbers to drink of and bathe in this water, to which wonderful curative properties were ascribed. Investigation showed that some pipes of a sewer which ran for some distance into the bay had become broken and that fresh water therefrom came directly to the surface. On September 10 there were 8 cases reported, on September 11, 16, and on September 12, 30. Access to the spring was then prohibited by the authorities and there was a rapid decline in the number of cases. Small sailing craft, called "paraos," which anchored in the immediate vicinity of the spring, were required to undergo five days' quarantine detention at a remote place in the harbor before being permitted to sail. This was done with the view of preventing any of this water being carried to the provinces and to guard against the outbreak of the disease among the personnel of the vessels after leaving here. As the danger from this source was over in a few weeks, the quarantine was declared off. From that time on there was a general decline of cholera throughout the island. This was in accord with the previous history of the disease, viz, that cholera in the Philippines never lasts beyond the third year.

In the early part of the spring the insular board of health felt warranted in passing the following resolutions:

[Passed March 23, 1904.]

"Whereas the last case of suspected Asiatic cholera occurred in the city of Manila on February 29, 1904, and the last known case occurred in the city on February 3, 1904, there having been but four positive or suspected cases of Asiatic cholera in the city since January 6, 1904; and

"Whereas the provinces adjacent to Manila have been free from cholera during the present calendar year, on motion

"Resolved, That the city of Manila is, and is hereby, declared free from the infection of Asiatic cholera."

[Passed April 27, 1904.]

"Whereas cases of Asiatic cholera have occurred in but three provincial towns of the Philippine Islands since February 8, 1904, and

"Whereas only one case of Asiatic cholera has been reported as occurring at any place in the Philippine Islands since March 8, 1904, and

"Whereas the city of Manila was declared, on March 23, to be free from the infection of Asiatic cholera, on motion

"Resolved, That the islands comprising the Philippine Archipelago be, and hereby are, declared to be free from the infection of Asiatic cholera; and be it

"Further resolved, That the commissioner of public health be directed to send a copy of these resolutions to the honorable the secretary of the interior, the municipal board, the collector of customs, and the United States Marine-Hospital Service."

PLAGUE.

The reduction in the number of plague cases over that of last year is probably one of the most satisfactory sanitary results that have been achieved during the year. The energetic application of modern sanitary principles has had its reward. During the fiscal year ended June 30, 1902, there were 121 cases reported, but probably many more occurred. This year there were 101 cases. Briefly, the plan inaugurated was as follows: From carefully prepared statistics it was found that the Chinese were many times more liable to contract the disease than the Filipinos. Accordingly, the Chinese population of Manila was inoculated with Shiga's antipest serum. It was the aim to give a primary and a month later a secondary inoculation. The records of the board of health show that no Chinaman contracted plague who had received a secondary inoculation, and only a few contracted the disease who had received the primary inoculation. The Chinese, then, instead of being the race most likely to contract the disease became the one least likely to contract it. During the last six months the plague has been confined almost entirely to the Filipinos. Since the period during which the Chinese have been free from plague corresponds to the period during which they were first inoculated with serum it would appear to be a fair inference that the result was due to the serum. Contacts are no longer quarantined. When an individual contracts plague he is immediately removed to the hospital and the contacts to the disinfecting station. The house from which he has been taken is disinfected; the contacts are similarly treated and then discharged. Rat catchers are immediately sent to the house and directed to catch not only the rats in the house, but also in the immediate neighborhood. When it is remembered that plague has prevailed with undiminished vigor in nearby foreign ports and that the climate and other conditions in Manila are favorable for its development it will be seen that the situation is encouraging. It is also worthy of note to mention that of all of the cases found not a single case could be traced to having been contracted outside of the islands. This shows that the maritime quarantine has been efficient, and no doubt has been of much assistance in stamping out the disease, because no fresh cultures were introduced.

Another important point for the quarantine officer is the fact that while several cases have occurred in widely separated provinces there was no spread from them. This would indicate a case of plague in a human being is not so great a source of danger as the introduction of infected rats or cargo. The application of the latter principle has been used by the Service almost entirely in preventing the spread of the disease to other ports of the islands during the past four years.

For a number of years past there has been an occasional sporadic case at Cebu. The finding of a case is generally preceded by dead rats being found in the neighborhood. In September last 11 cases made their appearance within comparatively a few days and the disease then disappeared again almost completely before the elaborate measures instituted by the board of health were properly started. Since that time there has been an occasional case, averaging possibly 1 a month. The Service has been fumigating with sulphur all vessels that leave either Cebu or Manila for other island ports. It has been the aim to fumigate all vessels that ply between Hongkong or other plague-infected ports

and Manila about twice a year, and especially after they have been in dry dock at Hongkong, during which process it is quite probable that rats came aboard. Since some of the dry docks are located in sections of the city that are plague infected the importance of this matter will be appreciated. In my opinion, one of the most important factors in the plague not easily gaining entrance here is the fact that there are no dry docks and that foreign vessels always unload into lighters.

During the active plague season at Amoy (generally May, June, July, and August) the consular surgeon there was requested to detain all steerage passengers for the Philippines in quarantine for the incubation period of the disease.

SMALLPOX AND VACCINATION.

Smallpox continues to be the disease which the quarantine officer meets with most frequently on board vessels. During the year 9 vessels were disinfected at Mariveles on account of smallpox and 8 at the other ports of the islands. The Commission has passed an act making vaccination compulsory, and the board of health is at present engaged in carrying the act into effect. If the health authorities are furnished with a reasonable amount of funds there is no reason why the Philippines should not become as free from smallpox as Porto Rico. The Service commenced the systematic vaccination of crews last September. Since that time there have been 18,773 persons vaccinated at all the ports at which Service officers are stationed. Of 11,300 persons vaccinated in Manila, it is known that there were 6,502 "takes." There were probably many more, but as they did not come under observation again, the exact number is unknown. At Iloilo there were 3,358 persons vaccinated, with 1,206 known "takes" (estimated "takes" 2,670). At Cebu there were 4,036 persons vaccinated, with 590 known "takes." At Jolo 420 persons were vaccinated; number of "takes" not reported. When it is remembered that many of these persons had been vaccinated before, it will be seen that the results were very satisfactory. At Manila the "takes" averaged over 50 per cent.

An administrative detail that was of great assistance from the standpoint of efficiency and as a time-saving device was the issuing of cards to all persons vaccinated. A red card, which, among other things, included the individual's name and the date of the vaccination, was used for the first vaccination, a white card for a second vaccination, and a blue card if the vaccination was successful. The cards were numbered consecutively. Starting with a definite number of cards, it therefore required only a few minutes' work to arrive at the number of vaccinations performed and with what result. The greatest time saving was effected, however, at the inspection. The crews were mustered. All holding blue cards were immediately dismissed. Thus there was no confusion, and the remaining ones were rapidly dealt with. After the work was well under way the various shipping firms were requested to employ only persons holding blue cards. This had an excellent effect and acted as a direct stimulant for seafaring people to be vaccinated and obtain the blue cards in order that they might be eligible in this respect for such positions as they desired.

LEPROSY.

Cases of leprosy were detected on 6 vessels. Two other vessels had suspicious cases on board, but the diagnosis could not be bacteriologically confirmed.

The Insular government has set aside the island of Cullon as a leper island. It is the intention ultimately to collect the lepers from all over the islands and send them there. It is estimated that there are 3,511 lepers in the Philippines. They are collected into various-sized groups at 40 different places throughout the provinces. By gathering them all at one place the danger of the spread of the disease will be much reduced and the per capita cost of keeping them lessened.

AID TO OTHER SERVICES.

During the fiscal year there were 737 physical examinations made of masters, mates, pilots, engineers, and other ships' officers at the request of the insular collector of customs. Of this number 94 were rejected. For the Immigration Service 5,759 immigrants were inspected and 351 rejected.

Thirty vessels were disinfected at the request of the board of health on account of being infected with cholera, rinderpest, etc.

Two special physical examinations were made at the request of the Philippine civil-service board.

At the request of the Army, transports were inspected at Mariveles at such times as they desired. The stevedores located at Mariveles were inspected daily for many weeks, and aid was rendered in establishing an isolation camp for them.

APPROPRIATION FOR A QUARANTINE STATION AT CEBU.

The Philippine Commission, in act No. 831, passed August 12, 1903, appropriated \$30,000, United States currency, for the erection and equipment of a quarantine station at the port of Cebu. On August 13, 1903, the following cablegram was sent to the Bureau:

"WYMAN, Washington, D. C.:

"Commission appropriated \$30,000 station Cebu. Have I authority to commence building?

"HEISER."

The reply received was as follows:

"WASHINGTON, D. C., August 19, 1903.

"HEISER, Manila:

"Yes, under regulation proper Philippine authority.

"WYMAN."

Steps were then at once taken for the erection of the same. A board of officers, composed of Passed Asst. Surg. Victor G. Heiser, Asst. Surgs. Carroll Fox and J. D. Long, decided that the island of Cautit, situated in the harbor of Cebu, about a mile below the port, was its first choice for a location. A piece of land about 3 miles above Cebu, on Mactan Island, was its second choice. The island of Cautit was considered by far the most desirable site, and, since it was in all probability Government property, it was thought best to make every effort to obtain it. When this intention became known at Cebu a claimant appeared. The court of land registration decided in favor of the Government. The case has been appealed to the court of first instance of Cebu. (The case is to come up for trial in the early part of August, and as soon as the outcome thereof is known a complete report of the steps taken since the appropriation was made will be forwarded.)

APPROPRIATION FOR AN ADDITIONAL LAUNCH.

The Philippine Commission, recognizing the great need of another launch for use of the quarantine service at Manila, appropriated, in act No. 831, passed August 12, 1903, the sum of \$4,000, United States currency, for this purpose. Through the proper channels a contract was awarded to a San Francisco firm for building the same. Owing to the immense amount of work to be done a certain amount of speed is absolutely essential, and owing to the weather conditions which prevail in Manila Bay it is necessary that a certain type of launch be adopted. The contractors failed to meet the specifications in both these requests, as well as in other essentials, and in consequence the contract was canceled. Negotiations are now under way for the purchase of a launch elsewhere.

INTERISLAND QUARANTINE.

The interisland quarantine inspection of vessels was in charge of the insular board of health for all ports other than ports of entry, and the Service has had control of the latter. Whenever an infected vessel was encountered by the board of health, if practicable, it was remanded to the nearest Service quarantine station for treatment. Up to the beginning of the second half of the fiscal year quarantine inspection of incoming vessels had been general throughout the islands. In the latter part of February the cholera situation had improved so much that the insular board of health requested the opinion of this office as to whether it was considered necessary to continue it. The reply was made that it was considered advisable to discontinue all maritime quarantine inspections at other than ports of entry, unless some special local condition demanded it. It is thought that a rigid inspection should still be made at present at the ports

of entry not only of foreign vessels, but also of all interisland vessels, for the purpose of keeping a surveillance over their sanitary condition. Since practically all local vessels sooner or later call at the ports of entry, it is thought that a good check can be established by this method. There has been a great improvement in the sanitary condition of interisland vessels during the past year, but there is still much left to be desired. Inspection by experienced officers is considered necessary from time to time, in order that the improvement which has been brought about may be maintained and other necessary ones instituted.

Every effort is made to inspect incoming vessels with promptness and dispatch. It is not believed that the sanitary condition of the islands is sufficiently grave to warrant an inspection that would interfere with the free movement of interisland vessels, and with that object in view the launch service has been so arranged that an incoming vessel can be inspected at any time of the day a few minutes after its arrival.

The insular collector of customs very kindly set aside three rooms in the custom-house for the use of the Service, and on June 28, 1904, the office of the chief quarantine officer was removed thereto. It is the intention to use the building at 78 Calle Madrid, which was formerly devoted to Service office purposes, as a laboratory and storehouse. In view of the fact that night work is frequently necessary, the latter will also serve as a night office. The present location of the office is a decided convenience to the public, and the change in location has been generally appreciated.

The circular letters, the statistics, the reports from the substations, and the financial statement follow:

[Circular letters.]

MANILA, P. I., July 7, 1903.

To the Steamship Agents and Others, Manila, P. I.

SIR: You are hereby informed that from this date it will not be necessary for vessels entering the port of Manila from domestic ports north of Corregidor to call at Mariveles for inspection.

This repeats the order issued by this office in circular letter dated April 20, 1903.

Respectfully,

VICTOR G. HEISER,
Passed Assistant Surgeon,
Chief Quarantine Officer for the Philippine Islands.

MANILA, P. I., September 26, 1903.

Medical Officer in Command,

United States Public Health and Marine-Hospital Service.

SIR: Owing to the continued absence of smallpox throughout the islands and to reduce the possibility of the infection being conveyed by ships, it has been decided to vaccinate the crews and foreign steerage passengers of vessels which enter the ports under the control of this Service.

In order to facilitate the work, and that the records of the same may be of value, a number of cards have been printed, a supply being sent you herewith.

Upon vaccinating a member of a crew you are directed to hand the person a red card properly filled out. The next time this individual comes under observation you will examine the vaccination, and if it has been successful you will destroy the red card and supply a blue one instead. The presentation of this latter card will exempt the individual from further vaccination. Whenever a red card is presented and there is no evidence of a successful vaccination the person presenting the same should be revaccinated, the red card destroyed, and a white one supplied. An individual who presents a white card and shows evidence of having been twice vaccinated by you, whether successfully or not, should have the white card destroyed and a blue one supplied.

Practical experience has shown that if the matter is properly explained to the shipping interests that in hiring crews they will always give preference to a person with a blue card, because he is much safer from a sanitary standpoint. Sailors and others who follow a seafaring life soon learn this and are anxious to obtain blue cards, and once having obtained them they preserve them.

An accurate record should be kept of the number of vaccinations done, the number successful on the first vaccination, the number successful on revaccination, and the number unsuccessfully vaccinated after two trials.

Respectfully,

VICTOR G. HEISER,
Passed Assistant Surgeon,
Chief Quarantine Officer for the Philippine Islands.

MANILA, P. I., November 12, 1903

Medical Officer in Command,
United States Public Health and Marine-Hospital Service.

SIR: In order to make the vaccination of crews still more efficient, the following additions are made to the circular letter of September 26, 1903:

When a white card is presented and on inspection it is found that the individual was twice unsuccessfully vaccinated, he should be revaccinated and the white card marked with an "X." When a white card with an "X" is presented, and when it is found that the individual was three times unsuccessfully vaccinated, he should be given a blue card, which, in addition to the other data, should have the figure "3" written upon it. When persons with the latter card are found at future inspections it will indicate to the inspector that the individual was vaccinated three times unsuccessfully and that further attempts would probably be useless.

Respectfully,

VICTOR G. HEISER,
Passed Assistant Surgeon,
Chief Quarantine Officer for the Philippine Islands.

MANILA, P. I., January 8, 1904.

To shipowners, shippers, agents, masters of vessels, and others concerned:

In order that the requirements of the United States Quarantine Laws and Regulations in force in this port with regard to vessels and their passengers, crew, and cargo may be better understood, the following regulations are hereby promulgated. Nothing in these rules, however, whether by omission or otherwise, is to be construed as exempting a vessel from complying with the United States Quarantine Laws and Regulations.

INCOMING VESSELS.

1. All vessels entering from ports outside of Manila Bay shall fly a yellow flag at the foremast head until boarded and granted pratique by the quarantine officer.
2. Until vessels have been granted pratique no person or vessel shall be allowed to come close enough to hold communication. Masters of incoming vessels will be held to strict accountability for the enforcement of this rule.
3. All cases of sickness of a contagious nature or deaths due to any cause while vessels are lying in port should be reported immediately to the quarantine office, or the quarantine officer on duty on the bay may be notified by hoisting the letter D of the International Code of Signals.
4. Vessels entering the ports of the Philippines are required to be mechanically clean and kept in good sanitary condition. Special attention should be given to the forecastles, galleys, toilets, baths, and living apartments.
5. In the event of any incoming vessel having sickness of any kind on board it is recommended that she call at Mariveles for inspection. If the disease is not of a quarantinable nature the vessel will be released at once and allowed to proceed to Manila and there granted pratique in the ordinary way. This suggestion is made with a view of avoiding the delay caused by the ship returning to Mariveles in the event of such disease being of a quarantinable nature.
6. All vessels arriving from infected ports, the ordinary running distance

from which is not over seven days from Manila, or vessels whose crew and steerage passengers have not been disinfected at port of departure, will be required to call at Mariveles for disinfection.

7. The cargo manifests of all vessels sailing from foreign ports to the Philippines should be submitted to the medical officer on duty at the United States consulate at the port of departure for signature.

8. Rabbits, dogs, guinea pigs, cats, and small animals in general from infected ports can not be landed, and all such animals, regardless of the port of origin, require a permit from this office prior to being landed.

9. Ship's stores and all other articles not on the manifest are not to be landed unless a permit has first been obtained from this office.

10. The quarantine anchorage, for the purpose of these regulations, is Manila Bay.

OUTGOING VESSELS (INCLUDES ONLY VESSELS BOUND FOR THE UNITED STATES OR ITS DEPENDENCIES).

1. As soon as it has been determined to dispatch a vessel to a United States port or to a port in its dependencies this office should be immediately notified.

2. Masters of vessels departing from this port must obtain a bill of health in duplicate, signed by the medical officer of the United States Public Health and Marine-Hospital Service. The applicant for the bill of health must be able to supply the following data: Name of vessel, nationality, rig, name of master, tonnage (gross), tonnage (net), iron or wood, number of compartments for cargo, compartments for crew, compartments for steerage passengers, name of medical officer, number of ship's officers, number of crew (including petty officers), number of cabin passengers, number of steerage passengers, number of crew or passengers landed at this port, number of crew or passengers embarked at this port, total number of persons on board, port of departure, where last from, destination, source of water and food supplies, number of cases of sickness and character of same during last voyage, and number of cases of sickness and character of same while vessel was in port. Before such bill of health can be issued the following rules must be complied with:

3. Before loading is begun vessels will be subject to inspection, and upon its completion the master will be informed as to what sanitary measures are deemed necessary and the probable time required to carry them into effect.

4. As early as possible the cargo manifests should be presented at this office for examination. If it is not practicable to present manifest, boat notes or bills of lading should be presented instead. In every case, before cargo, stores, or other articles are taken aboard, the consent of this office should first be obtained; otherwise, suspected cargo might have to be unloaded and the vessel disinfected.

5. All persons, including crew and passengers and their effects, taken on at this port, are subject to inspection before embarkation. The effects of cabin passengers should be assembled at least twelve hours prior to embarkation, those of the crew or steerage passengers at least twenty-four hours previously. This timely inspection is necessary in order that there may be no delay caused to the vessel in the event of disinfection being deemed necessary.

6. All baggage and other goods not on the ship's manifest must be labeled before being placed on board. All unlabeled baggage found on board at the time of the final inspection will have to be removed from the vessel.

7. After the final inspection, which is made by the quarantine officer on board, no further communication with shore or with other vessels in the harbor can be allowed.

VICTOR G. HEISER,
*Passed Assistant Surgeon,
Chief Quarantine Officer for the Philippine Islands.*

Quarantinable diseases in Manila during fiscal year 1904.

Week ended—	Cholera.		Smallpox.		Plague.		Week ended—	Cholera.		Smallpox.		Plague.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.		Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
1903.							1904.						
July 4.....	8	7	1	0	6	6	Jan. 2.....	2	1	0	0	0	0
July 11.....	8	6	3	0	1	1	Jan. 9.....	4	4	0	0	0	0
July 18.....	7	7	1	1	1	0	Jan. 16.....	0	0	0	0	5	3
July 25.....	8	7	1	0	4	4	Jan. 23.....	0	0	2	0	3	2
Aug. 1.....	7	7	1	0	2	2	Jan. 30.....	1	1	0	0	2	1
Aug. 8.....	12	8	0	0	2	2	Feb. 6.....	2	2	0	0	3	2
Aug. 15.....	20	16	1	1	4	4	Feb. 13.....	0	0	0	0	1	1
Aug. 22.....	29	22	1	0	3	3	Feb. 20.....	0	0	1	1	0	0
Aug. 29.....	19	19	3	1	2	1	Feb. 27.....	0	0	0	0	1	1
Sept. 5.....	15	13	0	0	2	2	Mar. 5.....	1	1	0	0	2	2
Sept. 12.....	79	63	2	3	1	1	Mar. 12.....	0	0	1	0	3	3
Sept. 19.....	93	81	1	0	2	2	Mar. 19.....	0	0	7	0	5	5
Sept. 26.....	55	53	1	1	0	0	Mar. 26.....	0	0	2	1	3	3
Oct. 3.....	52	49	1	0	0	0	Apr. 2.....	0	0	1	0	1	0
Oct. 10.....	38	35	0	0	0	0	Apr. 9.....	0	0	2	2	3	2
Oct. 17.....	87	35	0	0	1	1	Apr. 16.....	0	0	3	2	4	4
Oct. 24.....	23	22	1	0	2	1	Apr. 23.....	0	0	9	3	5	5
Oct. 31.....	7	7	0	0	1	1	Apr. 30.....	0	0	3	1	3	3
Nov. 7.....	8	6	0	0	0	0	May 7.....	0	0	2	3	6	5
Nov. 14.....	4	5	0	1	1	1	May 14.....	0	0	6	2	1	1
Nov. 21.....	9	7	0	0	1	1	May 21.....	0	0	5	3	5	5
Nov. 28.....	1	1	1	0	0	0	May 28.....	0	0	5	0	4	4
Dec. 5.....	3	3	1	1	0	0	June 4.....	0	0	3	0	2	2
Dec. 12.....	2	2	0	0	1	1	June 11.....	0	0	3	2	0	0
Dec. 19.....	6	6	1	0	1	1	June 18.....	0	0	2	1	0	0
Dec. 26.....	1	1	1	2	0	0	June 25.....	0	0	1	1	1	1
							June 30.....	0	0	1	1	0	0
Total.....								561	497	81	34	101	92

a To and including.

Report of the patients treated in the hospital at the Mariveles quarantine station during the fiscal year ended June 30, 1904.

Disease.	Number.	Nationality.		Result.	
		Norwegians.	Filipinos.	Recovery.	Death.
Smallpox.....	11	1	10	10	1
Cholera suspects.....	2	0	2	2	0
Malarial fever.....	2	0	2	2	0
Total.....	15	1	14	14	1

Incoming quarantine transactions at the port of Manila, P. I., for the fiscal year ended June 30, 1904.

Month.	Vessels inspected from—		Vessels in quarantine.	Vessels disinfect.	Bills of health issued.	Pieces of baggage disinfected.	Pieces inspected and passed.
	Foreign ports.	Domestic ports.					
1903.							
July.....	61	267	4	39	309	5,196	1,734
August.....	70	263	2	23	326	4,276	923
September.....	69	277	5	34	341	3,267	746
October.....	69	280	2	34	349	3,718	495
November.....	67	263		49	316	2,621	324
December.....	59	249		18	313	2,463	221
1904.							
January.....	45	256		55	295	858	122
February.....	49	270	1	22	333	252	53
March.....	58	350		34	422	1,961	219
April.....	57	343	2	38	400	2,339	261
May.....	58	314	7	49	369	4,648	377
June.....	55	225	3	22	322	492	26
Total.....	717	3,363	32	422	4,096	32,131	6,101

Incoming quarantine transactions at the port of Manila, P. I., etc.—Continued.

Month.	Crew in-spected.	Passengers in-spected.		Persons vacci-nated.		Persons bathed and effects disin-fected.	Persons quaran-tined (suspects).
		Cabin.	Steer-age.	Crew.	Passen-gers.		
1903.							
July.....	11,110	1,690	8,067	215	1,626	3,295	505
August.....	12,306	1,672	6,881	178	1,079	3,170	1,393
September.....	11,889	1,495	5,820	1,467	24	1,908	196
October.....	12,006	1,758	6,484	2,342	195	2,440	221
November.....	11,484	1,682	7,554	1,291	.....	2,850	.....
December.....	11,566	1,895	6,893	1,571	.....	1,724	.....
1904.							
January.....	10,029	1,330	4,966	1,367	.....	747	.....
February.....	10,340	1,212	5,775	1,433	.....	234	91
March.....	12,272	1,743	7,720	1,268	.....	872	.....
April.....	12,651	1,700	7,734	1,306	48	1,362	78
May.....	11,554	1,671	6,721	1,064	.....	719	256
June.....	9,679	1,638	6,500	943	3	239	60
Total.....	137,066	19,495	81,134	14,445	2,975	19,560	2,639

Outgoing quarantine transactions at the port of Manila, P. I., for the fiscal year ended June 30, 1904.

Month.	Vessels in-spected.	Vessels in quar-antine.	Vessels disin-fected.	Vessels remand-ed to Marive-les.	Pieces baggage disin-fected.	Pieces baggage in-spected and passed.	Crew (outgo-ing) in-spected.	Crew quaran-tined.
1903.								
July.....	32	4	29	2	4,390	2,154	1,415	124
August.....	8	8	8	.....	4,414	2,153	556	.....
September.....	15	11	4	.....	152	982	493	81
October.....	7	.....	5	.....	1,433	1,430	543	.....
November.....	6	.....	5	.....	1,812	1,182	507	.....
December.....	8	.....	7	.....	2,386	2,274	572	.....
1904.								
January.....	6	.....	4	.....	2,726	2,467	383	.....
February.....	6	.....	1	.....	3,746	2,952	330	.....
March.....	4	.....	3	.....	4,335	2,616	501	.....
April.....	4	.....	2	.....	3,059	3,641	398	.....
May.....	7	.....	4	.....	3,050	2,629	791	.....
June.....	8	.....	7	.....	2,464	3,807	423	.....
Total.....	111	23	79	2	33,066	28,287	6,882	206

Month.	Passengers (outgoing) inspected.	Passengers quar- antined.		Persons vac- ci- nated.	Bathed and cloth- ing disin- fected.	Cases quarantinable diseases among per- sons in quarantine.		
		Cabin.	Steer- age.			Lep- rosy.	Small- pox.	Chol- era.
1903.								
July	2,144		210		2,475	1		2
August	2,063			923	2,103		1	
September	1,333		27		1,239			
October	1,121				1,107			
November	998				867			
December	1,338				1,356			
1904.								
January	1,244				1,263			
February	1,844				1,943			
March	1,827				1,665			
April	1,229				1,275			
May	645				1,092			
June	960				958			
Total	16,776		237	923	17,343	1	1	2

CEBU.

Report of Asst. Surg. Carroll For.

U. S. TREASURY DEPARTMENT,
PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF THE U. S. QUARANTINE OFFICER,
Cebu, P. I., July 1, 1904.

SIR: I have the honor to make the following brief narrative report relative to the transactions of this station for the fiscal year ended June 30, 1904.

On account of the second outbreak of cholera in this port it was necessary to start the year with the institution of an outgoing quarantine. At this time the number of cases reported reached as high as 22 a day, and there were undoubtedly many more that were never reported at all. The method of quarantine pursued consisted in keeping the crews aboard vessels while in this port and prohibiting the embarkation of steerage passengers unless they underwent the necessary detention prior to the sailing of the vessel. The vessel discharged and loaded in quarantine under guard, the guard being paid by the owner or agent of the vessel and employed by us. This method was very satisfactory from a quarantine standpoint and did not interfere with the shipping as does the ordinary five-day quarantine. A copy of the circular letter sent out at this time is inclosed.

By August the conditions in Cebu having greatly improved, and cholera being present in many of the other ports, it was thought advisable to raise the quarantine, which was done on August 10, 1903. The cholera then steadily declined, until the month of November there was but one case, and there has been none since then.

The water which is supplied to the steam and larger sailing vessels has fortunately always been free from contamination. It is taken from a well on a coral island opposite Cebu, is owned by the "Marino Water Company," and is well guarded. If this water had ever become infected with the cholera germ there would have been many more cases of cholera on the local steamers. The bancas, on the other hand, frequently developed cholera after being in this port a week or more, as they procure their water from the shallow wells along the water front of Cebu. These wells, by reason of their position and character, receive the drainage from a large part of the city. Cebu has no sewage system, much of the effete matter being deposited upon the ground, and it can be readily seen how these shallow wells, dug in a low, porous soil, can be the means of spreading disease.

Smallpox and leprosy have been present here during the year, as well as in other parts of the islands, and both of these diseases have been found on incoming vessels. We have made in this port 4,036 vaccinations, all but a few of those vaccinated being sailors employed on the local boats. This should undoubtedly greatly lessen the chances of smallpox being conveyed by vessels.

The boats which give the most trouble in this port and which have been and always will be the means of carrying contagion are the bancas, or paraos, as they are called elsewhere. These are native craft of from under 1 ton to 33 tons burden. On account of the very narrow beam they are all built with outriggers. They carry from 3 to 85 people, including crew and passengers, and enter port at times as high as 25 a day. Few of them are in good hygienic condition, and any perfect control of them is very difficult.

In July a case of plague was found in the town in a Filipino boy. This boy had not been away from Cebu and the origin of the case could not be traced, although it was said that a case of plague had occurred in the same house a year before. There have been all told this year 20 cases of bubonic plague, mostly involving the femoral glands, although there have been a few cases in which the glands at the angle of the jaw have been affected. These latter have occurred in children. The disease has been typical clinically and since receiving the microscope have been able to demonstrate the bacillus pestis in smears from the glands.

In looking over the records of the station it will be seen that my predecessor, Passed Assistant Surgeon Stansfield, saw and reported five cases of plague, in none of which was the origin determined. This is also true of the cases reported during the last year. From the facts that all of those infected had been residing in Cebu for some time previous to the development of plague, that no origin could be traced in any case, and that they appeared at such

irregular and lengthy intervals in different parts of the city, it is probable that plague has been here for some time and is only awaiting the proper conditions to become epidemic.

No plague was found on any vessel arriving at this port during the year, and to guard against the exportation of the disease by infected rats all of the vessels hailing from this port have been fumigated with sulphur twice, and this fumigation will be done again twice during the coming year. There has been no noticeable increased mortality among rats in Cebu.

After constant scolding and threatening the captains are at last taking an interest in keeping their vessels clean, and with the end of the year there has been a great improvement in the sanitary condition of the coastwise boats.

On November 7, 1903, a board composed of Passed Asst. Surg. V. G. Heiser, chairman; Asst. Surg. Carroll Fox, and Asst. Surg. J. D. Long, recorder, met to select a suitable site for a quarantine station at this port. The first choice was a small island in Cebu Harbor known as Cault Island; the second choice a piece of land on Mactan Island, opposite Cebu, and the third choice some land situated near the second choice. Cault Island is by far the best of the three, as there is a small harbor well protected from the strong winds, plenty of water can be gotten close to the shore so that only a small wharf need be built, and there is good holding ground. At present there is no fresh water on the island, but this difficulty can be overcome by a deep well, by a distilling apparatus, by collecting rain water, or some other means. This island was claimed by another party and the case was taken to court and decided in favor of the Government. It was then appealed to the next higher court and is now awaiting trial.

During the year there were only 19 immigrants examined, none of which were certified for deportation. Nearly all of the immigrants coming to this port enter by way of Manila and undergo the medical inspection there.

Respectfully,

CARROLL FOX, *Assistant Surgeon.*

The CHIEF QUARANTINE OFFICER FOR THE PHILIPPINE ISLANDS.

(Inclosure—Circular Letter.)

OFFICE OF THE UNITED STATES QUARANTINE OFFICER,
PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Cebu, P. I., June 26, 1903.

To steamship companies, owners and agents of vessels, and others

On account of the prevalence of cholera in this port it has become necessary to impose certain restrictions on outgoing vessels so that the exportation of cholera will be prevented.

In order that the shipping will be interfered with as little as possible the following regulations have been promulgated:

1. Crews of vessels while in this port must remain aboard and will not be allowed to have any communication with the shore. The captain only will be permitted to leave the vessel to attend to necessary business.
2. Steerage passengers must remain in quarantine a sufficient length of time to make five days upon arriving at destination. If detention is not possible they will not be allowed to embark.
3. The above paragraph also applies to members of the crew shipped at this port.
4. Bills of health will be issued in the bay just before the departure of the vessel.

These regulations will go into effect on and after July 1, 1903, by direction of the chief quarantine officer of the Philippines.

Respectfully,

CARROLL FOX,
*Assistant Surgeon, Public Health and
Marine-Hospital Service, Quarantine Officer.*

Incoming quarantine transactions at the port of Cebu, P. I., for the fiscal year ended June 30, 1904.

Month.	Vessels in- spected from—		Vessels in quar- antine.	Vessels disin- fected.	Bills of health issued.	Pieces of bag- gage disinfected.	Crews inspected.	Passengers inspected.		Persons held in quarantine.	Persons bathed and effects disin- fected.	Crews and pas- sengers vacci- nated.
	Foreign ports.	Domestic ports.						Cabin.	Steerage.			
1903.												
July.....	10	343	7	6	162	161	5,845	160	1,511	100	109	.....
August.....	11	345	3	.....	194	63	6,069	147	1,636	16	16	72
September.....	9	319	.....	43	135	.....	5,034	135	1,443	.....	.....	.....
October.....	7	311	3	4	165	36	5,121	157	1,431	29	28	822
November.....	4	286	1	2	125	.....	4,568	174	1,527	2	70	203
December.....	8	352	.....	1	140	.....	5,256	223	1,576	.....	55	406
1904.												
January.....	2	506	.....	.....	182	.....	5,662	282	2,728	.....	.....	406
February.....	3	532	.....	.....	134	.....	6,236	211	2,296	.....	.....	781
March.....	15	322	2	3	148	29	7,243	315	7,243	18	20	698
April.....	4	436	.....	15	129	17	5,568	266	1,970	26	8	280
May.....	5	414	.....	14	115	.....	5,405	288	1,907	.....	.....	148
June.....	6	364	.....	2	129	.....	4,769	255	1,894	.....	.....	223
Total.....	89	4,832	18	92	1,708	306	66,846	2,613	27,162	190	306	4,036

Outgoing quarantine transactions at the port of Cebu, P. I., for the fiscal year ended June 30, 1904.

Month.	Vessels inspected.		Vessels in quaran- tine.	Vessels disinfected.	Pieces of baggage disinfected.	Pieces of baggage in- spected and passed.	Crews (outgoing) in- spected.	Crews quarantined.	Passengers (outgo- ing) inspected.	Passen- gers quar- antined.		Persons vaccinated.	Persons bathed and clothing disinfected.	Cases of cholera on vessels.
										Cabin.	Steerage.			
1903.														
July.....	316	158	2	57	16	5,043	1,068	1,154	42	477	.....	.....	43	3
August.....	41	41	.....	40	127	866	384	383	.....	116	.....	.....	45	.....
September.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
October.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
November.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
December.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1904.														
January.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
February.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
March.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
April.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
May.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
June.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	367	199	2	97	143	5,899	1,452	1,587	42	593	.....	88	.....	8

ILOILO.

[Report of Asst. Surg. G. W. McCoy.]

U. S. TREASURY DEPARTMENT,
PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF THE U. S. QUARANTINE OFFICER,
Iloilo, P. I., July 1, 1904.

SIR: I have the honor to render the following report of quarantine transac-
tions at this port for the year ending June 30, 1904:

The station was in charge of Asst. Surg. M. K. Gwyn until August 3, 1903.

From September 13 to October 23, 1903, it was in charge of Asst. Surg. J. W. Amesse. During the remainder of the year it has been in charge of Asst. Surg. G. W. McCoy.

A number of vessels arrived with cholera and smallpox on board and have in all cases been treated as nearly in accordance with the regulations as our facilities would permit.

One vessel arrived with a case of leprosy. As the victim was a native of Iloilo, the case was turned over to the local board of health. The vessel was disinfected by this Service.

A number of vessels have been held from a few hours to a day for the purpose of making a diagnosis in cases that presented a doubtful eruption or fever, the cause of which was not at once apparent.

Crews of all interisland vessels coming here have been vaccinated from time to time.

At intervals of a few months local vessels have been fumigated for the purpose of destroying vermin. Foreign vessels have been fumigated whenever they were empty. Experience has taught us that it is almost a waste of time to fumigate a vessel with cargo.

The only class of vessels with which we have had any difficulty are the small boats known as "bancas" and "paraos." They sometimes enter the port at night, crews going ashore, claiming ignorance of quarantine regulations. They are then required to collect their crews, proceed to the bay, and await inspection, but one can not be certain that he is seeing the people who arrived on the vessel.

During the year cholera is the only quarantinable disease, aside from leprosy, that has prevailed at this port. The first cases were reported in July and the last cases in February. Accurate figures were difficult to obtain, but at no time did the death rate exceed 20 per day. Practically no measures were taken to limit its spread, and it simply died out by the operation of natural causes. It was rather discouraging, at a time when we were holding infected vessels in strict quarantine, to know that the cases were occurring in the city and not even the simplest precautions taken to prevent the spread of the disease. Indeed, on one occasion the office messenger asked for half a day's leave of absence to attend the funeral of his father and mother, who had, he said, died the previous night of cholera. Investigation showed that he had given a truthful reason for making the request. While the cholera prevailed in the port a rigid outgoing inspection was maintained.

During the prevalence of cholera on the island of Negros, vessels coming from there were inspected even though they were but two or three hours on the voyage.

The inclosed circular letter shows what special precautions have been taken in dealing with vessels from plague-infected ports while they were in port.

There have been a number of violations of quarantine regulations. They have usually been punished by a fine imposed by the collector of customs.

Arriving aliens have been inspected for immigration purposes. There have been several rejections for trachoma and conditions rendering persons liable to become public charges. It is to be regretted that there are no hospital facilities where doubtful cases can be placed for observation.

Throughout the year cordial relations have been maintained with both the civil and military authorities, and shipping people have very generally willingly complied with all regulations.

Respectfully,

GEORGE W. MCCOY,
Assistant Surgeon.

THE CHIEF QUARANTINE OFFICER FOR THE PHILIPPINE ISLANDS.

[Inclosure—Circular letter.]

REGULATIONS GOVERNING VESSELS FROM PLAGUE PORTS.

OFFICE OF THE U. S. QUARANTINE OFFICER,
Iloilo, P. I., May 16, 1904.

Owners and agents of vessels, Iloilo, P. I.

SIRS: In future all vessels from ports infected or suspected of being infected with plague will be required to have all lines and cables connecting the vessels and the shore guarded by rat funnels while moored in the Iloilo River.

This includes vessels from practically all foreign ports and Manila and Cebu in the Philippines.

Between sunset and sunrise all planks to the shore shall be taken up and lighters or other vessels will not be permitted to remain alongside the vessels above indicated at night.

Vessels failing to comply with these regulations will not be permitted to remain in the river.

Respectfully,

GEORGE W. MCCOY,
Assistant Surgeon, P. H. and M. H. S.,
Quarantine Officer.

Copy furnished, ———, Iloilo, P. I.

Incoming quarantine transactions at the port of Iloilo, P. I., for the fiscal year ended June 30, 1904.

Month.	Vessels inspected from—		Vessels in quar- antine.	Vessels disin- fected.	Bills of health issued.	Pieces baggage—	
	Foreign ports.	Domestic ports.				Disin- fected.	Inspect- ed and passed.
1903.							
July	9	53		3	201	15	
August	12	213	3	4	327	78	
September	5	222			220		
October	8	256	1	1	234		
November	6	218			236		
December	1	279			280		
1904.							
January	6	206	1	1	301		
February	6	201	1	3	368		
March	12	222		8	460		
April	7	191	1	9	442		
May	7	184	2	3	278		
June	8	134	2	4	129		
Total	82	2,379	11	86	3,476	93	

Month.	Crews in- spected.	Passengers in- spected.		Persons held in quaran- tine.	Persons bathed and effects dis- infected.	Crew and passengers vacci- nated.
		Cabin.	Steer- age.			
1903.						
July	2,597	320	1,157			
August	4,690	263	1,817	54	54	
September	4,544	275	2,614			
October	4,376	256	2,050	3	3	217
November	4,717	388	1,981			520
December	4,645	335	1,636			506
1904.						
January	3,760	422	1,564	38	38	490
February	4,051	315	1,526	38		495
March	4,654	447	1,626			380
April	4,273	480	1,455	9	9	234
May	3,916	361	1,327	9	9	254
June	3,122	249	1,159	22	22	260
Total	49,345	4,111	19,912	173	135	3,358

Outgoing quarantine transactions at the port of Iloilo, P. I., for the fiscal year ended June 30, 1904.

Month.	Vessels inspected.	Vessels in quarantine.	Vessels disinfect.	Pieces baggage disinfect.	Crew (outgoing) inspected.	Passengers (outgoing) inspected.	Persons bathed and clothing disinfect.
1903.							
July.....							
August.....							
September.....	223	3	3	64	2,455	1,668	32
October.....	228			6	3,261	2,537	
November.....	235				1,635	1,049	
December.....							
1904.							
January.....							
February.....							
March.....							
April.....							
May.....							
June.....							
Total.....	686	3	3	70	7,341	5,252	32

JOLO.

[Report of Asst. Surg. M. K. Gwyn.]

UNITED STATES TREASURY DEPARTMENT,
PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF THE U. S. QUARANTINE OFFICER,
Jolo, P. I., July 7, 1904.

SIR: I have the honor to transmit herewith the annual report of the quarantine transactions at the port of Jolo, P. I., for the fiscal year ending June 30, 1904. The tabulated statistical report will be found elsewhere.

Jolo has been maintained as an inspection station by the Service since May 20, 1903, after a comparison of the relative merits of it and Zamboanga in a report made by Assistant Surgeon Amessee to the chief quarantine officer. Previous to this time the quarantine work was conducted by the military authorities.

For the purpose of boarding, a rowboat and two attendants are employed at a cost of \$20 per month United States currency. There are no facilities for the handling of infected vessels. Should such an emergency arise it would be necessary to remand the vessel to Iloilo or Cebu, about thirty hours' steaming from Jolo. So far the necessity has never arisen.

The average number of vessels inspected per month is about 25. Of these there are three regular steamers from Singapore via British North Borneo ports. The other vessels are all interisland vessels, a number being small native boats of the type known as "sampans," and a few pearlers.

One of the principal sources of danger to the southern Philippines is from the native boats trading between the Borneo coast and the adjacent islands of the Sulu Archipelago. The earliest recorded invasion of cholera came through the island of Tawi Tawi into the Philippine Islands. At present no sanitary supervision can be exercised over these vessels, as they rarely come to Jolo; to do so they would have to make a journey of several hundred miles, which naturally they do not do unless there is some pressing necessity.

As a result of ten months' observation and service at this port, I would recommend that an acting assistant be appointed to take charge of the station, to be paid a suitable fee, say \$5 per vessel, and that the quarantine work be confined to the foreign ships. This would make the running expenses about \$30 per month. Arrangements can be made to have one of the army surgeons on duty at Jolo do this work at the rate named. It would also be wise to have a similar arrangement made at the port of Zamboanga. This would give the Service control of all the ports of entry in the Philippines.

Systematic vaccination of the crews of all vessels touching at this port have been carried on for several months with good results. No difficulties have been met with in vaccinating natives, as they look on it as a matter of course. Whether they appreciate the benefit they derive from it I do not know.

Respectfully,

M. K. GWYN, Assistant Surgeon.

The CHIEF QUARANTINE OFFICER FOR THE PHILIPPINE ISLANDS.

Incoming quarantine transactions at the port of Jolo, P. I., for the fiscal year ended June 30, 1904.

Month.	Vessels inspected from -		Vessels disinfect.	Bills of health issued.	Crew inspected.	Passengers inspected.		Crew and passengers vaccinated.
	Foreign ports.	Domestic ports.				Cabin.	Steerage.	
1903.								
July	3	32	1	36	1,067	120	479	.....
August	7	42	.....	32	1,574	153	1,520	.....
September	2	19	.....	13	758	68	129	.....
October	2	18	.....	19	1,019	109	679	.....
November	1	23	.....	16	1,176	134	1,339	.....
December	5	14	.....	13	884	86	203	.....
1904.								
January	4	23	.....	14	1,060	177	306	50
February	8	26	.....	15	1,214	148	283	106
March	5	38	.....	24	1,232	158	231	23
April	1	40	.....	20	1,021	136	437	241
May	2	24	.....	26	1,325	147	462	.....
June	1	42	.....	37	843	104	456	.....
Total	36	346	1	265	13,033	1,539	6,614	420

FINANCIAL STATEMENT, QUARANTINE SERVICE IN THE PHILIPPINE ISLANDS (UNITED STATES CURRENCY).

I.—General appropriation account, insular treasurer, fiscal year 1904.

DEBITS.

To appropriation, act 807, quarantine service.....	\$42,800.00
To appropriation, act 1010, quarantine service.....	2,140.00
To appropriation, act 1049, quarantine service.....	33,875.00
To appropriation, act 1188, quarantine service.....	5,000.00
Total	83,815.00

CREDITS.

By withdrawals by disbursing officer.....	53,290.00
By amount expended by auditor, claim J. W. Ames.....	301.33
By amount credited insular purchasing agent.....	15,998.07
By balance unwithdrawn.....	14,225.60
Total	83,815.00

II.—Statement of funds (disbursing officer), appropriations of fiscal year 1903.

DEBITS.

1903.	
Oct. 10. Received from treasurer, A. W. 3974.....	\$3,370.000
Nov. 7. Refund to expenditures.....	8.095
1904.	
June 11. Received from treasurer, A. W. 5014.....	41.815
Total.....	3,419.910

CREDITS.

1903.	
Nov. 7. Refund to treasurer, receipt 3327.....	8.095
1904.	
June 30. Balance to be accounted for by disbursements.....	3,411.815
Total	3,419.910

III.—Statement of funds (disbursing officer), appropriations of fiscal year 1904
(United States currency).

DEBITS.

1903.		
July 31.	Received from treasurer, A. W. 3598	\$6,000.00
Aug. 12.	Refunds to expenditures	48.00
Aug. 26.	Received from treasurer, A. W. 3718	4,000.00
Sept. 7.	Refunds to expenditures	59.50
Sept. 30.	Received from treasurer, A. W. 3888	3,000.00
Oct. 12.	Refunds to expenditures	65.50
Oct. 26.	Received from treasurer, A. W. 4002	6,000.00
Oct. 26.	Refunds to expenditures	35.50
Nov. 25.	Refunds to expenditures	39.50
Nov. 26.	Received from treasurer, A. W. 4159	3,000.00
Dec. 11.	Received from treasurer, A. W. 4212	2,140.00
Dec. 12.	Refunds to expenditures	51.50
Dec. 18.	Received from treasurer, A. W. 4256	2,750.00
1904.		
Jan. 9.	Refunds to expenditures	60.00
Feb. 11.	Received from treasurer, A. W. 4489	3,750.00
Feb. 25.	Received from treasurer, A. W. 4561	4,500.00
Feb. 25.	Refunds to expenditures	25.00
Mar. 25.	Received from treasurer, A. W. 4704	4,000.00
Mar. 28.	Refunds to expenditures	45.00
Apr. 2.	Refunds to expenditures	44.00
Apr. 28.	Received from treasurer, A. W. 4846	4,500.00
May 3.	Refunds to expenditures	32.50
May 13.	Received from treasurer, A. W. 4897	5,000.00
June 16.	Refunds to expenditures	34.50
June 27.	Received from treasurer, A. W. 5088	4,650.00
Total		53,830.50

CREDITS.

1903.		
Aug. 12.	Refund to treasurer, receipt 1178	\$48.000
1904.		
June 30.	Cash balance on hand June 30, 1904	2,937.815
June 30.	Balance to be accounted for by disbursements	50,844.685
Total		53,830.500

IV.—Special appropriation, act 831, August 12, 1903.

Cebu Quarantine Station.....	\$30,000.000
Launch	4,000.000
	<hr/>
Total.....	34,000.000
Balance on hand June 30, 1904.....	34,000.000

Statement of funds to be accounted for by expenditures during the period from
July 1, 1903, to June 30, 1904.

Disbursements by disbursing officer, funds fiscal year 1903-----	\$3,411.815
Disbursements by disbursing officer, funds fiscal year 1904-----	50,844.685
Disbursements by auditor, commutation of quarters, funds fiscal year 1904-----	301.330
Insular purchasing agent, supplies, funds fiscal year 1904-----	15,998.070
	<hr/>
Total-----	70,555.900

*Expenditures.***July, 1903 :**

Compensation of personnel	\$2, 816. 225
Office and general Service expenses.....	44. 500
Station supplies and disinfectants.....	39. 200

\$2, 899. 925**August, 1903 :**

Compensation of personnel	2, 345. 160
Office and general Service expenses.....	85. 200
Launch and barge expenses, supplies, and repairs....	29. 425
Station supplies and disinfectants.....	377. 160

2, 836. 945**September, 1903 :**

Compensation of personnel	3, 404. 815
Office and general Service expenses.....	283. 540
Launch and barge expenses, supplies, and repairs....	1, 194. 080
Station supplies and disinfectants.....	1, 934. 030
Repairs to buildings and wharves.....	164. 705

6, 980. 170**October, 1903 :**

Compensation of personnel	3, 063. 620
Office and general Service expenses.....	158. 670
Launch and barge expenses, supplies, and repairs....	659. 505
Station supplies and disinfectants.....	423. 870
Repairs to buildings and wharves.....	2, 950. 000
New construction and new equipment.....	20. 500

7, 277. 165**November, 1903 :**

Compensation of personnel	3, 099. 580
Office and general Service expenses.....	550. 165
Launch and barge expenses, supplies, and repairs....	78. 500
Station supplies and disinfectants	346. 765

4, 075. 010**December, 1903 :**

Compensation of personnel	3, 078. 890
Office and general Service expenses.....	2, 755. 235
Launch and barge expenses, supplies, and repairs....	1, 531. 315
Station supplies and disinfectants.....	1, 768. 045
Repairs to buildings and wharves.....	6. 160
New construction and new equipment.....	543. 510

9, 683. 155**January, 1904 :**

Compensation of personnel	23. 000
Office and general Service expenses.....	80. 000
Launch and barge expenses, supplies, and repairs....	7. 135
Station supplies and disinfectants.....	386. 320

496. 455**February, 1904 :**

Compensation of personnel	5, 955. 525
Office and general Service expenses.....	1, 137. 270
Launch and barge expenses, supplies, and repairs....	70. 190
Station supplies and disinfectants.....	433. 300
New construction and new equipment.....	154. 000

7, 750. 285**March, 1904 :**

Compensation of personnel	3, 172. 095
Office and general Service expenses.....	846. 425
Launch and barge expenses, supplies, and repairs....	970. 420
Station supplies and disinfectants.....	1, 162. 315
Repairs to buildings and wharves.....	797. 550
New construction and new equipment.....	346. 060

7, 294. 865**April, 1904 :**

Compensation of personnel	2, 873. 375
Office and general Service expenses.....	637. 035
Launch and barge expenses, supplies, and repairs....	726. 000
Station supplies and disinfectants.....	2, 040. 225
New construction and new equipment.....	463. 730

6, 740. 365

May, 1904:

Compensation of personnel	3,242.765	
Office and general Service expenses	1,136.915	
Launch and barge expenses, supplies, and repairs	620.295	
Station supplies and disinfectants	200.795	
Repairs to buildings and wharves	150.000	
New construction and new equipment	258.745	
		5,009.515

June, 1904:

Compensation of personnel	3,101.680	
Office and general Service expenses	783.770	
Launch and barge expenses, supplies, and repairs	1,140.255	
Station supplies and disinfectants	3,048.465	
Repairs to buildings and wharves	144.985	
New construction and new equipment	86.800	
		8,912.045

Total 70,555.900

*Total expenditures quarantine service in the Philippine Islands, July 1, 1903,
to June 30, 1904.*

DETAILS.

Compensation of personnel	\$36,176.73
Office and general service expenses	8,498.725
Launch and barge supplies and repairs	7,033.12
Station supplies and disinfectants	12,760.49
Repairs to buildings and wharves	4,213.40
New construction and new equipment	1,873.435

Total (United States currency) 70,555.90

Expenditures by station.

Manila:

General service expenses	\$16,630.770	
Launch expenses	5,632.470	
New station equipment	363.295	
		22,686.535

Mariveles:

General service expenses and supplies	22,030.330	
Repairs to buildings and wharves	4,213.400	
New construction and new equipment	982.555	
		27,226.285

Iloilo:

General service expenses	3,318.830	
Launch and barge expenses	4,892.255	
New station equipment	72.335	
		8,283.420

Cebu:

General service expenses	4,506.120	
Launch and barge expenses	4,298.470	
New station equipment	328.415	
		9,133.005

Jolo:

General service expenses	2,840.380	
Boat expenses	259.440	
New station equipment	126.835	
		3,226.655

Total (United States currency) 70,555.900

Respectfully submitted.

VICTOR G. HEISER,

Passed Assistant Surgeon,

Chief Quarantine Officer for the Philippine Islands.

The SURGEON-GENERAL.

JAPAN.

YOKOHAMA.

REPORT BY ASST. SURG. DUNLOP MOORE.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF THE MEDICAL OFFICER IN COMMAND,
Yokohama, Japan, July 9, 1904.

SIR: I have the honor to transmit herewith a statistical report of transactions at this station during the year ending July 30, 1904.

A more detailed report is in preparation, but it can not be satisfactorily completed prior to the departure of the writer for Manila. It is proposed to include therein some account of the peculiar Japanese disease known as "shima mushi" or "tsutsuga mushi," a malady which possesses special interest owing to the striking points of analogy between it and the spotted fever of the Rocky Mountains, as described by Anderson in Hygienic Laboratory Bulletin No. 14. For instance, it is confined to the banks of a few rivers in western Japan; the symptomatology is somewhat similar, it being characterized by a cutaneous rash and considerable mortality; a hæmatozoon has been described as occurring in the erythrocytes of infected individuals; the infection is apparently conveyed by the bite of an insect.

Number of bills of health issued: To sailing vessels, 20; to steamers, 210; total, 230.

Destination of sailing vessels: Guam, 11; Puget Sound, 4; New York, 2; San Francisco, 1; Manila, 1; Dutch Harbor, 1.

Destination of steamers: Puget Sound, 57; San Francisco, 40; Manila, 48; New York, 35; Portland, Oreg., 13; Honolulu, 6; Los Angeles, 1; Iloilo, 1.

Seven vessels were granted bills of health without inspection; 223 vessels, having a total personnel of 4,490 cabin passengers, 26,142 steerage passengers, and 20,840 crew, were inspected; 9,746 steerage passengers and 235 crew were bathed, and their body clothing was disinfected by steam; 13,461 pieces of baggage were disinfected by formaldehyde gas.

Respectfully,

D. MOORE, *Assistant Surgeon.*

The SURGEON-GENERAL.

NAGASAKI.

REPORT OF SANITARY INSPECTOR ROBERT I. BOWIE.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF THE MEDICAL OFFICER IN COMMAND,
Nagasaki, Japan, July 1, 1904.

SIR: I have the honor to inclose herewith a recapitulation of the inspection work done on shipboard by the undersigned during the fiscal year ending June 30, 1904. Owing to the outbreak of the war, thousands of Japanese refugees returned from Siberia and Manchuria, and immediately thereafter smallpox of a virulent type broke out in several localities, of which Nagasaki seemed to suffer the most. We are not yet entirely free, the epidemic having lasted five months already, but at present the cases are only sporadic. It is only reasonable to infer, since Amoy, Canton, and Hongkong have been declared plague-infected ports, and war existing in Chinese territory, that the Far East offers at present the most favorable opportunities for the widespread diffusion of quarantinable diseases. It is practically impossible for us to obtain reliable data as to the character and amount of sickness at the front, as well as at the emergency hospitals. I only know that those in Japan are rapidly filling, and that new places are being utilized for medical purposes. Lately I requested permission to visit one of the principal hospitals at Sasebo, but was refused. The same secrecy observed in the conduct of all their military operations holds good in all matters indirectly connected therewith.

I have not kept a record of the immigrants leaving for American ports, but of the total number 656 were recommended for rejection; of these, 1 only was for favus, the balance for trachoma.

After an experience based upon at least 4,000 examinations of Chinese, Japanese, and Koreans, I am of the opinion that hundreds of cases are improperly diagnosed and rejected as trachomatous. I have also noticed that the conjunctival surfaces of Orientals are far less sensitive than those of Caucasians.

The local quarantine station is again in working order, and I am informed by those who have had occasion to use it that it leaves nothing to be desired in the way of comfort and convenience.

Vessels inspected	91
Steamers	90
Sailing vessels	1
Crews examined	14,075
Passengers examined	26,925

Respectfully,

ROBT I. BOWIE,
Sanitary Inspector.

The SURGEON-GENERAL.

KOBE.

Acting Asst. Surg. J. B. Fowler continued on duty in the office of the United States consul at Kobe, Japan, inspecting vessels and crews bound for ports of the United States. He also inspected all emigrants about to embark for this country.

CHINA.

HONGKONG.

REPORT BY PASSED ASST. SURG. M. J. WHITE.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

OFFICE OF MEDICAL OFFICER IN COMMAND.

Hongkong, July 11, 1904.

SIR: The report of this station for the fiscal year ended June 30, 1904, is herewith submitted.

PUBLIC HEALTH MEASURES FOR THE PROTECTION OF THE UNITED STATES AND INSULAR TERRITORY.

The work has furnished further evidence that the enforcement of the foreign quarantine regulations is a very difficult problem. Quarantinable diseases in Hongkong, with the exception of a few cases of smallpox, were confined to Asiatics, many of whom went as cabin passengers along with presumably non-exposed Europeans, and the same conditions applied to steerage passengers and personnel. A Chinaman may reside and work outside the infected district of the city, yet his racial status is sufficient evidence that he frequents it for amusement and association with his friends, in whose houses he is as much exposed to infection as they are. All cabin passengers must be treated alike or exceptions must be made and the baggage of the Chinese disinfected. Should this be done, racial discrimination will be alleged vociferously, and it will be cited that Europeans trade with Chinese storekeepers, and therefore should be considered exposed and subjected to the same treatment. The fact that the quarantinable diseases were confined almost entirely to Asiatics indicates that the exposure of Europeans is insignificant.

The fairly well-to-do Chinaman, who from financial necessity would go steerage to San Francisco, would go second-class cabin to Manila on the more expensive vessels and first-class cabin on the cheaper vessels.

At this port it is not possible to detain passengers, as indicated in paragraphs 30 to 37, and through course of time the practice has arisen of requiring steerage passengers and the strictly laboring element of the personnel to bathe and have their baggage disinfected. Some Chinese steerage passengers and crew have resorted to substitution to avoid bathing and disinfection, and their clothing have been hidden on sampans to be passed aboard just before sailing.

In certifying bills of health I have adopted the following form, the Service seal being affixed:

"U. S. PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,

"Hongkong, ———, 1904.

"I certify that this bill of health is correct.

"—————,

"Passed Assistant Surgeon.

"U. S. Public Health and Marine-Hospital Service."

On original bills the upper right corner is utilized and on supplemental bills the reverse side, there being insufficient room elsewhere.

The result of the work is tabulated as follows:

Steamships inspected and passed.....	465
Sailing vessels inspected and passed.....	11
Personnel on steamships.....	39,005
Personnel on sailing vessels.....	241
Cabin passengers on steam vessels.....	8,800
Cabin passengers on sailing vessels.....	3
Steerage passengers on steam vessels.....	13,775
Steerage passengers on sailing vessels.....	0
Persons required to bathe.....	40,653
Persons rejected.....	77
Baggage disinfected and labeled.....	41,686
Vessels disinfected.....	15

Cargo labeled and held in godowns, paragraph 22.

Hides.....	bales..	38
Feathers.....	do.....	313
Bristles.....	do.....	270
Human hair.....	boxes..	177

Cargo disinfected.

Hides.....	bales..	121
Lighters.....	.....	2

The shipment of cargo was supervised by inspection, disinfection, detention, and certification of shipping orders, and due attention was given to ship supplies and private supplies of passengers and personnel. Shipping orders were certified as follows, for the purpose of preventing the taking aboard of prohibited cargo:

"To the Master:

"——— items passed. If any evidence of alteration for substitution of items, do not accept this shipment.

"—————,

"Passed Assistant Surgeon,

"U. S. Public Health and Marine-Hospital Service."

The shipment of fresh vegetables hence to the Philippine Islands has been prohibited, because it was impossible for this office to exercise such sanitary supervision as would enable the issuance of a certificate that such vegetables had not been exposed to the infection of cholera, nor is it possible to determine the essential fact of the existence or nonexistence of cholera on the distant vegetable farms along the West and Canton rivers, whence the export and local trade is supplied.

PUBLIC HEALTH AID TO THE REPUBLIC OF PANAMA.

This was but recently begun. The shipment of cargo for transshipment at San Francisco was supervised. No vessels have departed hence for ports of Panama.

During the year the quarantinable diseases in the colony have been returned as follows: Bubonic plague, 526 cases, 473 deaths. The epidemic appears to be under very good control. It is customary to examine rats trapped in different

sections of the city, and if found pest infected to institute measures to prevent occurrence of human cases thereabouts, it satisfactorily appearing that rat plague precedes human plague in a district. The other ordinarily recognized measures are carried out. A number of human plague cases have been imported from other ports of the Orient. The rats continue infected.

Cholera, 42 cases, 39 deaths. Two cases were imported from Saigon. Only Asiatics were attacked.

Smallpox, 65 cases, 41 deaths. There were several European victims.

Typhus fever, no cases, no deaths.

Yellow fever, no cases, no deaths. The conditions here would support an epidemic.

Leprosy, occasional cases drifted into the colony, but were deported to Chinese territory.

M. J. WHITE,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

SHANGHAI.

REPORT BY ACTING ASST. SURG. S. A. RANSOM.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.
OFFICE OF MEDICAL OFFICER IN COMMAND,
Shanghai, China, July 18, 1904.

SIR: I have the honor to transmit herewith the annual report of the transactions at this station during the fiscal year ended June 30, 1904.

The opposition demonstrated during the previous year to the restrictions imposed by the Service has to some extent subsided, owing probably to the facts that those interested have become more or less familiar with the reasonable demands made, and that absolute impartiality has been shown toward all. At times, however, some slight hostility is yet apparent.

It has been the constant effort of this office to avoid inflicting any unnecessary hardship on vessels, and to conciliate the shipping interests generally as far as this can be done without in any way diminishing the efficiency of the Service, and it is believed that in the main this effort has been successful.

No effort has been spared to become acquainted with all conditions affecting the health of Shanghai, and the various outports which ship goods through this place to the United States. This has been attended with some difficulty, but the practice of securing from the various consular officers situated at outports weekly sanitary reports, inaugurated with the assistance of the Department of State in June, 1903, has aided considerably in this direction. In this way information as to the reported and estimated number of deaths from quarantinable diseases is obtained, and a space for remarks is utilized for the mention of any special facts of interest from a sanitary standpoint. The data are necessarily incomplete owing to the difficulty in securing reliable statistics from Chinese quarters, but the information thus obtained is nevertheless of considerable assistance. Through this means this office has been advised of the existence of the following diseases at different periods during the year at the places named: Tientsin, plague, cholera, and variola; Hankow, cholera and typhus fever; Foochow, plague; Chefoo, cholera; Nuchwang, plague—epidemic.

The various concerns in Shanghai engaged in packing goods for export to the United States have been inspected from time to time so that the processes in vogue might be kept up to the standard required by the Service. Consular certificates are required from outports, showing what methods have been employed in preparing transshipment cargo.

In this connection it may not be out of place to mention briefly the various methods employed: The curing of hides of neat cattle is effected by immersing each hide in a one-fourth to one-half of 1 per cent solution of Cowan's or Erkenbrach's arsenical paste and then hang them in the sun to dry. Long-haired skins are sometimes painted on the fleshy side with this solution, but are usually packed dry in powdered naphthalene in the proportion of 6 pounds of the powder to the bale of from 400 to 600 skins, according to their size. It is supposed that 500 gallons of the arsenical solution will cure from 1,000 to 1,200 heavy hides and from 8,000 to 10,000 light skins. While it has been impossible to learn the constituents of the paste from which this solution is made, it seems to at least satisfactorily preserve the hides treated. There are very few dry salted

hides shipped and raw skins are rejected. Bristles are boiled and cleaned, and, in addition, sometimes packed in naphthalene prior to shipment. Wool is packed with naphthalene, 6 pounds to the bale of 680 pounds, when quarantinable disease prevails at point of origin. Human hair is disinfected with formaline as are also personal and household effects shipped as freight. Vegetables, such as onions and potatoes, the only articles of this class shipped to United States ports, are required to be dipped in a 2 per cent solution of formaline. Silk, straw braid, tea, dried rhubarb, and wood and nut oil are not especially prepared, as it is thought that they are comparatively free from danger of conveying infection. It may be mentioned in passing, however, that the two latter articles are merely expressed oils, and are not treated by any process which would render them sterile. These include the principle articles of export from here.

Supervision over freight shipped from or through this port is exercised, when no quarantinable disease is present, by requiring that all manifests be submitted to this office for approval and signature, and any manifest containing an entry of goods which have not complied with the quarantine regulations is refused approval. In addition, the shipping orders or boat notes for human hair, household and personal effects, cowhides, etc., are required to be countersigned the year round, so that proper precautions may be taken with these articles.

During the prevalence of a quarantinable disease this practice is superseded by that of countersigning all shipping orders, and the officers of vessels are instructed to receive on board absolutely no freight the shipping order for which is not properly signed.

The methods of dealing with ships and their personnel are the same as last year, with but slight alterations. A careful examination is made of the crew and passengers and temperatures taken where necessary. Steerage passengers and members of crews shipped here are required to submit their effects for disinfection, which is accomplished by having all articles contained in tight wooden boxes or trunks and sprinkling between each layer of clothing formaline saturated sawdust, about 40 cc. of a 40 per cent solution being used to each ordinary-sized trunk. The container is then labeled, and to guard against its being opened before being placed on board the vessel is sealed, it being required that the seal shall be intact at the time of inspection immediately prior to the sailing of the ship. The office boy, the only assistant here, is required to see to the unpacking of articles to be disinfected, while the medical officer superintends in person the process of disinfection, labeling, and sealing.

It is not practicable to bathe and disinfect the body clothing of crew and steerage passengers here, as there is no apparatus on hand with which to do the work and no place to detain the individuals after such treatment pending the sailing of the vessel.

The rule that the Asiatic crew and steerage passengers on board vessels must be prevented from going ashore here is still in force, and it is believed is carried out with trifling exceptions on the through liners. In the case of vessels coming up the river and lying alongside docks for several days, the control of the Asiatics, especially the crew, in this respect is a rather difficult task. The officers of the ships are cautioned to enforce the restrictions as closely as possible, but undoubtedly the men get ashore more or less frequently. It is thought, however, that their baggage remains on board during their stay here, and thus one source of infection is guarded against.

In the disinfection of vessels, where this has been considered necessary, sulphur dioxide 4 per cent, produced by the pot method, has been the agent generally employed, although bichloride of mercury solution, 1:800, has been used in several instances where gaseous disinfection was not needed. Where vessels have been treated with sulphur gas the effects of the crew have also been fumigated with the same agent. The municipal steam chamber is too inaccessible for use.

On account of the presence of smallpox at this port at all seasons, it has been deemed wise to suggest to masters that as many as possible of the personnel of their vessels, when bound direct to a United States port, be vaccinated, especially the crew and steerage. The suggestion has usually been adopted, and is in line with a communication received from the chief quarantine officer of the Philippines, and will unquestionably prevent to a considerable extent the development of smallpox on board vessels after their departure from Shanghai, as happened in several instances last year.

In view of the fact that plague prevails more or less extensively throughout

the year at ports both north and south of this place, which ports have intimate connection with Shanghai through the medium of local steamers, and the further fact that at most of these places there is a total lack of precautions against rat invasion of the vessels, rendering it at least possible that infected rats may gain access to ships, contaminate the rats already thereon, which in turn may infect the rats at the docks here at any time, it has been recommended by this office that the various shipping agents adopt the practice of requiring the use of rat guards on all lines of vessels while at the various docks here, remove the gangways at night, keep the vessels a short distance from the wharf by means of booms, etc., and thus guard against the possibility of rats getting aboard here. Compliance with this suggestion will eliminate the necessity of fumigating vessels at this point for the destruction of rats only.

The use of rat guards has not been made obligatory because of lack of ability on the part of this office to enforce it. This would require close supervision, which could only be had by means of a launch to take the quarantine officer on inspection trips up and down the river at irregular intervals to see that the orders were being carried out by the different vessels at the docks. The matter is therefore left largely to the good will of the masters and agents, and in a fair proportion of cases the suggestion has been adopted.

Notwithstanding the fact that the war between Russia and Japan has caused the withdrawal of practically all the Japanese vessels carrying freight and passengers to the United States, the work of this office shows a very appreciable increase over that done during the previous year.

Among other things it was found necessary, on account of the lack of facilities afforded by the various steamship companies, and their apparent total inability to control passengers on the tenders, owing chiefly to the large increase in the passenger traffic of late, to discontinue from May 7 the practice of inspecting at the jetty in Shanghai those taking passage on the mail boats, and substitute therefor an inspection of the vessel and her entire personnel at Woosung. This has entailed considerable additional labor on the part of the medical officer, as he must now visit Woosung much more frequently, each trip consuming the better part of a day. This is, however, the only satisfactory plan at this time, although it is hoped that it may be possible to return to the former practice upon the completion of the customs jetty now in course of construction.

Transactions at Shanghai during fiscal year ended June 30, 1904.

Steamers inspected and passed.....	100
Steamers disinfected.....	12
Sailing vessels inspected and passed.....	16
Sailing vessels disinfected.....	6
Crew on steamers.....	6,433
Crew on sailing vessels.....	319
Passengers on steamers.....	3,747
Passengers on sailing vessels.....	2

Transactions at Shanghai national quarantine station during fiscal year ended June 30, 1904.

Bills of health issued.....	148
Pieces of freight visced.....	679,841
Pieces of freight inspected and passed.....	586
Pieces of freight disinfected.....	405
Pieces of freight rejected.....	133
Pieces of baggage disinfected.....	497
Immigrants examined.....	82
Immigrants rejected.....	7

A comparison of the tables submitted herewith with those prepared last year will show that there were 18 more steamers inspected and 14 more vessels disinfected than during the same period last year. The increase over last year in the personnel inspected was 1,606 crew and 983 passengers. The total number of individuals inspected was 10,501. The disinfection of baggage in 1903 amounted to 175 pieces, as compared with 497 pieces this year. These figures do not include the baggage of crew fumigated on board vessels where the latter were disinfected. No correct estimate as to the increase or otherwise of freight visced this year can be made, as the figures of last year were incomplete.

There were investigated during the year 25 cases of illness occurring on vessels, only 3 of which proved to be of a quarantinable nature, viz, cholera. In two instances the vessels and crews were disinfected throughout by this office. In the third instance, that of the ship *Olivebank*, the vessel sailed without complying with the recommendations of this office and without bill of health.

As stated in last year's report, an autoclave could be used to some advantage at this station for the disinfection of effects of steerage passengers, etc., and for the treatment of small infected spaces on board vessels, such as staterooms or cabins. For this latter purpose it could not be used unless the station is supplied with a means for taking it on board.

One serious difficulty met with in the disinfection of vessels with sulphur has been the inability to secure in Shanghai a sufficient quantity of this article for the treatment of large spaces, its importation being curtailed by the Chinese authorities on account of sulphur being classed as a munition of war. It is suggested, therefore, that if this office were supplied with sulphur by the Bureau, or permitted to purchase here and keep on hand a stock of 500 to 1,000 pounds, with the necessary pots, wood alcohol, etc., and furnish it to vessels at a cost just sufficient to cover expenses, this difficulty would be successfully met. I am told that the stores here charge the exorbitant price of 40 cents Mexican per pound for sulphur.

There is one other point which it is desired to bring to the attention of the Bureau. Passengers are taken at all points in the Orient by the Empress Line of steamers, destined to Seattle via Vancouver. As these vessels do not touch at an American port, they and their passengers do not come under the supervision of the officers of this Service stationed in China and Japan. There is nothing to prevent passengers of any class coming from infected districts by coast boats or overland, and going by the Empress route almost direct to Seattle without any treatment at this end. This applies to freight as well. It may be that provision is made to meet this contingency at Seattle.

Shanghai, viewed from a quarantine standpoint, has this year undergone in her health conditions a considerable improvement over last year. The annual report of the municipal health officer for the calendar year 1903 shows that there were reported a total of 178 deaths only from Asiatic cholera, 16 among the foreign population and 162 among the natives, and a total mortality of 251 from smallpox—10 foreigners and 241 natives. It is noticeable, however, in this connection that there was a very marked increase in the total number of deaths reported among the natives, commencing about the middle of July and continuing until the second week in October. Cholera was officially reported present August 9, so it will be seen that the outbreak of that disease corresponds closely with the increased death rate. There was an increase of 1,722 in the total deaths among natives during the four months of July, August, September, and October, the same months during which cholera prevailed in 1903, over those for the same period in 1901, when the disease was not present. While there was an estimated increase of 25,000 in the population for 1903, this would not, of course, account for much of the difference. It is fair to presume, therefore, that cholera was responsible for a majority, at least, of the additional deaths, which supports the theory that but little over 10 per cent of the actual deaths are officially reported.

Vital statistics are necessarily very imperfect in a community of this kind where so much has to be left to information obtained through nonprofessional sources, and the efficient health department here can hardly be held accountable for discrepancies. Report of communicable diseases by physicians is not obligatory, and there are hundreds of cases of all kinds which are never seen by a medical man.

There were no other quarantinable diseases reported present within the municipality, although leprosy is known to exist to a greater or less extent. Well-marked cases have been seen at large on the streets, and no systematic attempt is made at isolation.

The following is the reported mortality from communicable diseases other than those already mentioned for the year among the foreign population: Enteric fever, 22 deaths; diphtheria, 4 deaths; scarlet fever, 1 death; tuberculosis, 32 deaths; rabies, 1 death. The ordinary diarrheal diseases were responsible for 20 deaths.

Among the natives the only communicable disease reported in addition to those previously specified was tuberculosis, which is credited with 1,976 deaths.

Beriberi is at all times present here, and dengue was epidemic during August and September, about half the population, native and foreign, suffering

from a more or less severe attack of the latter disease. The eruption and pain were the principal features observed, although some cases without the former were seen. The mortality was nil.

The beriberi mortality was reported as 7 deaths out of 47 reported cases.

The total mortality from all causes among foreigners in 1903 was 214, with an estimated population of 8,300, and among natives there were 7,986 deaths reported, with an estimated population of 375,000.

It should be remembered that the figures given above do not include the residents of the native city, Pootung, or the districts lying outside the limits of the foreign concession, which, so far as sanitary considerations are concerned, might be considered as a continuation of the latter, although the municipal council can exercise no supervision over them. The population of these districts must aggregate much over 1,000,000, but there is no way in which anything like a correct estimate can be had as to either population, morbidity, or mortality. All of these places are in a filthy state, which defies description.

Among animals within the municipality and in the adjacent country, rinderpest, foot-and-mouth disease, glanders, and rabies have prevailed.

From January 1 to June 30, 1904, the only quarantinable disease reported present in Shanghai was smallpox, which caused 256 deaths during that interval. This is 46 deaths more than during the same period last year. There were 21 cases reported among foreigners.

While plague has not made its appearance within the foreign concession here, several cases—it has not been possible to learn the exact number—have been removed from vessels at the Imperial Chinese quarantine station at Woosung. This disease constantly threatens Shanghai from the north and south, and whether it exists in the country back of the city can only be surmised. If so, it is certainly not epidemic at this time. The general conditions are such that if this disease once gained a foothold here it is thought there would be a severe epidemic.

An examination of the mosquitoes of this section reveals the fact that while *Culex* largely predominate, *Anopheles* and *Stegomyia fasciata* are found in fair proportion. Shanghai is an ideal breeding place for these insects, which abound. It is essentially a flat city, being only from 5 to 20 feet above sea level, and is surrounded on almost every side by fields which are during a large part of the year converted by irrigation for agricultural purposes into veritable swamps. Malarial fever is present all the time, mostly of the ordinary tertian type. If yellow fever were once introduced it is hard to say where its ravages would cease, as it would be, it is believed, absolutely impossible to eradicate the intermediate host of this disease, the mosquito.

The following were the recorded meteorological conditions for the year: Mean barometer, 30.03; mean temperature, 59° F.; mean daily range, 15.9° F.; mean humidity, 78 (saturation, 100); rainfall, 42.76 inches.

The bacteriological examination of the water supply, which is obtained by pumping river water at a station below the city upon sand and gravel filter beds at high tide, showed a maximum of 140 in August, a minimum of 52 in February, and an average of 77 colonies per cubic centimeter.

It has been very gratifying to note that the bills of health issued by the various officers of this Service in the Orient seem to be the basis upon which quarantine officers of other services form their opinion as to the health of vessels and ports of departure. This notwithstanding the fact that bills of health are issued by other nationalities.

I have again to acknowledge my indebtedness to Consul-General Goodnow for cordial support and assistance in carrying on the work of this office.

Respectfully,

S. A. RANSOM,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

INDIA.

DETAIL OF OFFICERS AT CALCUTTA AND BOMBAY.

On account of the wide prevalence of cholera and plague in India, Passed Asst. Surg. E. K. Sprague was, on June 25, 1903, detailed by the President, under the quarantine act of February 15, 1893, for

duty in the office of the American consul-general at Calcutta, and on August 17, 1903, Acting Asst. Surg. E. H. Hume was similarly detailed at Bombay. These officers inspect all vessels and crews leaving their respective ports for United States ports and, with the consul, issue the consular or supplementary bills of health. They also furnish the Bureau with weekly sanitary reports concerning their station, which are regularly published in the Public Health Reports. They also transmit special reports concerning different parts of the country where they are stationed that may be of sanitary interest to the United States. (See Public Health Report, November 20, 1903, "Topography and sanitary condition at port of Calcutta," by P. A. Surg. E. K. Sprague; also Public Health Report, December 4, 1903, "Water supply of Calcutta;" Public Health Report, May 20, 1904, "Plague investigation" and "Leprosy in India," by Acting Assistant Surgeon Hume.)

As a preliminary to granting the bill of health, it is their duty to see that the United States quarantine regulations for vessels leaving foreign ports infected with cholera or plague for ports of the United States, its possessions or dependencies, are complied with.

MEDICAL INSPECTION OF IMMIGRANTS.

During the fiscal year ended June 30, 1904, 840,714 aliens came to the United States. As required by the immigration law, practically all these were examined by officers of the Service at the port where they entered. Upon the request of the Commissioner-General of Immigration officers of the Service were detailed exclusively for examination of aliens about to embark for the United States at the ports of Victoria and Vancouver, British Columbia—Asst. Surg. M. W. Glover at Victoria and Acting Asst. Surg. Herbert W. Riggs at Vancouver, British Columbia. An officer of the Service was also detailed for the inspection of aliens at Nogales, Ariz. The medical inspectors were continued at Naples and Palermo, Italy, and at Quebec, Canada. On July 25 Surg. George W. Stoner, in charge of the medical inspection of aliens at Ellis Island, N. Y., was directed to proceed to Richmond, Vt.; Malone, N. Y.; Montreal and Quebec, Canada; Niagara Falls and Buffalo, N. Y., and Port Huron, Detroit, and Sault Ste. Marie, Mich., to instruct the medical officers at these places as to the methods for examination of aliens, so that a uniform system should be established. On August 6 Asst. Surg. C. E. D. Lord, medical inspector at San Francisco, was ordered to proceed to Seattle, Tacoma, Port Townsend, and Sumas, Wash.; Victoria and Vancouver, British Columbia; Portal, N. Dak., and Winnipeg, Manitoba, for the same purpose.

CORRESPONDENCE RELATIVE TO QUESTION OF STRIPPING IMMIGRANTS FOR EXAMINATION.

[Letter.]

UNITED STATES IMMIGRATION SERVICE, MEDICAL DIVISION,
New York, N. Y., August 15, 1903.

SIR: I have the honor to submit herewith for such advice as the Bureau may be pleased to extend, a letter addressed to me by the commissioner of immigra-

tion at this station, under date of the 12th instant, requesting an opinion as to the necessity of stripping all aliens of their clothing to enable us to determine whether they are suffering from any disease (including particularly diseases mentioned in the statute) or whether they are physically unsound in any particular which is likely to render them public charges. In case this is not necessary in all cases, an opinion is requested as to whether it is necessary as to any great percentage, and, if so, approximately what percentage?

In connection with the foregoing I may say that during my recent absence on special duty, the medical officer in temporary charge was requested by the commissioner to strip and examine all unmarried male aliens arriving at this station, with the view to determine by such examination whether syphilis or any form of venereal disease exists to any considerable extent among arriving immigrants.

An examination was then made of the arrivals covering a number of different vessels at intervals, during a period of a week or more, and so far as I could learn, upon my return to this station last week, the only cases found were one of gonorrhea and one of suppurative inguinal glands, as reported by Surgeon Peckham in his letter to the Bureau of July 29, 1903, and one case since that date of ulcer of penis.

I therefore directed that the wholesale stripping method be discontinued and the usual form of examination be resumed, as per book of instructions, by which always a certain proportion of the arriving aliens are examined in sufficient detail to determine the existence of any marked form of disease, to wit:

"Cases turned aside for special examination, as well as any others to whom the attention of the examiner has been brought, should be subjected to a sufficiently thorough physical examination to determine whether there are other defects besides those which primarily attracted attention. The examiner should detain any alien or aliens as long as may be necessary to insure a correct diagnosis."

I then informed the commissioner that, in my opinion, the stripping method has been given a sufficient trial to prove the correctness of the observations previously made at this station, as shown by the medical reports, that syphilis is one of the rarest diseases among immigrants. For example, of the 3,427 arriving aliens admitted to the immigrant hospital at Ellis Island during the year ending June 30, 1903, only two were found to be suffering with syphilis.

The commissioner has no desire whatever to urge the matter, but now that it has been under consideration requests an expression of an official opinion.

Respectfully,

G. W. STONER,
Surgeon in Charge.

The SURGEON-GENERAL.

[Inclosure.]

OFFICE OF COMMISSIONER OF IMMIGRATION,
New York, N. Y., August 12, 1903.

SIR: I request that you give me your opinion as to the necessity of stripping all aliens of their clothing to enable you to determine (1) whether they are suffering from any disease (including particularly diseases mentioned in the statute), or (2) whether they are physically unsound in any particular, which is liable to render them public charges. In case you are of the opinion that this is not necessary as to all aliens, then please state whether or not, in your opinion, it is necessary as to any great percentage, and, if so, approximately what percentage.

Respectfully,

WM. WILLIAMS,
Commissioner.

Dr. GEORGE W. STONER,
Surgeon in Charge at Ellis Island.

[Letter in reply to above.]

WASHINGTON, September 5, 1903.

SIR: Referring to your letter of August 15, 1903, inclosing a communication from William Williams, commissioner of immigration at the port of New York, requesting an opinion as to the necessity of stripping all aliens of their clothing in order to determine whether they are suffering from any disease, including

particularly diseases mentioned in the statute, or whether they are physically unsound in any particular which is likely to render them public charges, you are informed that a meeting of the Service Board was called to consider this question, and it decided that your action in discontinuing further stripping of male immigrants was a proper one, as the information before the board convinced them that the number of cases of venereal disease discovered in aliens entering the port of New York under this system of stripping them was too small to justify such a procedure; besides there were other reasons which rendered it objectionable.

Respectfully,

WALTER WYMAN,
Surgeon-General.

Surg. GEORGE W. STONER,
*Medical Division, United States Immigration Service,
Ellis Island, N. Y.*

OFFICERS ON DUTY AT THE CONSULATE IN CHINA AND JAPAN INSTRUCTED
TO EXAMINE ALIENS BY REQUEST OF SECRETARY OF COMMERCE AND
LABOR.

[Letter.]

TREASURY DEPARTMENT,
Washington, August 19, 1903.

SIR: I have the honor to invite your attention to the inclosed letter from the honorable the Secretary of the Department of Commerce and Labor, bearing date August 15, 1903, addressed to yourself, upon the subject of the medical inspection, by officers of this Service, of aliens embarking for the United States at the ports of Kobe, Nagasaki, and Yokohama, Japan, and Hongkong and Shanghai, China, and to make the following statement and recommendation in relation thereto:

The Bureau has medical officers detailed in each one of the ports mentioned in said communication. They are detailed by the President, under the quarantine law of 1893, in the offices of the United States consuls, to enforce the Treasury quarantine regulations.

The diseases mentioned in said letter are not quarantinable diseases under the regulations, but it is evident the immigration act of March 3, 1903, gives ample authority for the examination requested to be made by our officers in the foreign ports. It is understood that the Department of Commerce and Labor requests the detail, for this purpose, of these Service officers by the Treasury Department.

These additional duties can be performed by these officers without interfering with their present duties; in fact, it will aid them; but it will be made plain to these officers that on finding any of these loathsome or dangerous contagious diseases referred to in the immigration act their power is only to notify steamship companies that if carried they will be subject to penalties on arrival on this side.

I have to recommend, therefore, that the request of the Secretary of Commerce and Labor be complied with, and that necessary instructions, as above indicated, be transmitted to the officers in the ports named.

Respectfully,

WALTER WYMAN,
Surgeon-General.

The SECRETARY OF THE TREASURY.

Approved:

R. B. ARMSTRONG, *Assistant Secretary.*

[Letter.]

DEPARTMENT OF COMMERCE AND LABOR.
OFFICE OF THE SECRETARY.
Washington, August 15, 1903.

SIR: In conformity with the provisions of sections 17 and 22 of the act approved March 3, 1903, entitled "An act to regulate the immigration of aliens into the United States," it is the desire of the Department to adopt every means

to prevent the migration to this country of persons afflicted with loathsome or dangerous contagious diseases.

I therefore have the honor to request, subject to your approval, that arrangements be made whereby officers of the Public Health and Marine-Hospital Service will make medical inspection of aliens embarking for the United States at the ports of Kobe, Nagasaki, and Yokohama, Japan, and Hongkong and Shanghai, China, the said officers to be instructed to certify upon each immigration manifest that the aliens whose names are entered thereon have been examined and found to be free from diseases of the class above mentioned, particularly tuberculosis, favus, and trachoma.

This recommendation is made with the understanding that all expenses incident to special details of officers at any of the ports specified will be reimbursed from the appropriation "Expenses of regulating immigration."

As it is particularly desired to inaugurate this improved service at an early date, the Department would appreciate information as to the progress made in arranging the assignments requested.

Respectfully,

GEO. B. CORTELYOU, *Secretary.*

The SECRETARY OF THE TREASURY.

[Circular letter of instructions.]

AUGUST 21, 1903.

Passed Asst. Surg. JOHN McMULLEN,

Public Health and Marine-Hospital Service, Hongkong, China.

(Care United States Consulate-General.)

SIR: You are informed that at the request of the honorable the Secretary of the Department of Commerce and Labor, and with the approval of the honorable the Secretary of the Treasury, medical inspection of aliens embarking for the United States at the ports of Kobe, Nagasaki, and Yokohama, Japan, and Hongkong and Shanghai, China, will be instituted, and medical officers at those ports will be instructed to certify upon each immigration manifest that the aliens whose names are entered thereon have been examined and found to be free from loathsome or dangerous contagious disease, particularly with reference to tuberculosis, favus, and trachoma.

You are hereby directed to make this inspection of aliens destined to the United States, certifying, as required by law, upon the manifest that those whose names are inscribed on the manifest are free from loathsome or dangerous contagious diseases; and in the event of detecting a would-be emigrant with such disease, you will notify the steamship company accordingly.

A copy of the letter of the Secretary of Commerce and Labor of August 15, 1903; a copy of Bureau letter of August 19, 1903, to the honorable the Secretary of the Treasury; and also a copy of the Book of Instructions for the Medical Inspection of Immigrants, approved January 15, 1903, are inclosed herewith for your information and guidance.

Special care in your examinations will be taken with regard to tuberculosis, favus, and trachoma.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

P. S.—You are directed to make a descriptive list of the aliens recommended by you for rejection, said list to be in duplicate, one copy to be forwarded by you, in the most expeditious manner, to the medical officer in charge of the medical inspection of immigrants at the port of arrival and one copy to be mailed to the Bureau.

WALTER WYMAN, *Surgeon-General.*

A similar letter sent to each of the following named:

Acting Asst. Surg. J. Bucknill Fowler, Public Health and Marine-Hospital Service, care United States consulate, Kobe, Japan.

Acting Asst. Surg. Robert S. Bowie, Public Health and Marine-Hospital Service, care United States consulate-general, Nagasaki, Japan.

Asst. Surg. Dunlop Moore, Public Health and Marine-Hospital Service, care United States consulate-general, Yokohama, Japan.

Acting Asst. Surg. S. A. Ransom, Public Health and Marine-Hospital Service, care United States consulate-general, Shanghai, China.

UNITED STATES.

ASTORIA, OREG.

Report of inspection of aliens at port of Astoria, Oreg. (Columbia River quarantine station), during the year ended June 30, 1904, by Asst. Surg. Baylis H. Earle.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
July.....	84	0	0	
August.....	52	0	0	
September.....	12	0	0	
October.....	77	0	0	
November.....	66	0	0	
December.....	38	0	0	
January.....	4	0	0	
February.....	0	0	0	
March.....	71	0	0	
April.....	36	0	0	
May.....	0	0	0	
June.....	8	0	0	
Total.....	392	0	0	

Respectfully,
The SURGEON-GENERAL.

BAYLIS H. EARLE,
Assistant Surgeon in Command of Station.

BALTIMORE.

Report of inspection of aliens at port of Baltimore, Md., during the year ended June 30, 1904, by Asst. Surg. C. W. Wille.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
July.....	5,996	87	10	Talipes equinus, 1; deformed leg, 2; poor physique and hernia, 1; curvature of spine, 1; pregnancy, 2; senility, 3.
August.....	4,065	61	14	Chronic inflammation glands of neck, 1; trachoma, 5; blind, 1; pregnancy, 1; hernia, 3; curvature of spine, 1; chronic osteomyelitis, 1; senile, 1.
September.....	4,996	57	11	Trachoma, 3; hernia, 2; cataract, 1; valvular disease of heart, 2; insanity, 1; senility, 1; poor physique, 1.
October.....	7,828	109	9	Trachoma, 4; hernia, 3; lameness, 1; curvature of spine, 1.
November.....	5,649	96	7	Trachoma, 1; poor physique, 1; senile, 2; lame, 1; hernia, 2.
December.....	4,074	115	15	Trachoma, 9; poor physique, 1; hernia, 4; syphilis, 1.
January.....	843	23	2	Insanity, 1; hernia 1.
February.....	1,125	21	0	
March.....	4,875	63	12	Trachoma, 9; insanity, 1; syphilis, 1; pulmonary tuberculosis, 1.
April.....	4,529	68	5	Trachoma, 4; hernia, 1.
May.....	6,380	92	6	Trachoma, 4; senility, 1; syphilis, 1.
June.....	6,049	73	7	Trachoma, 5; senility, 1; syphilis, 1.
Total.....	56,371	865	98	

The SURGEON-GENERAL.

C. W. WILLE,
Assistant Surgeon, in Temporary Charge.

BOSTON.

REPORT ON MEDICAL INSPECTION OF ALIENS AT BOSTON, MASS., BY ACTING ASST. SURG. M. V. SAFFORD.

BOSTON, MASS., July 1, 1904.

SIR: In connection with the "annual report of detained immigrants," transmitted herewith, I beg to submit also the following, which seems to cover any other features of interest in the immigration work at this port:

Certification.—During the past fiscal year approximately 3,000 diseased or mentally or physically defective immigrants were brought to the attention of the immigration officials at this port.

(1) Of this number, 513 were certificate cases; that is, cases to be regarded as certifiable in accordance with the bureau book of instructions, and comprising cases of Idiots, insane persons, epileptics, persons afflicted with a loathsome or with a dangerous contagious disease, and cases of diseases, deformities, and defects which might seem likely to render an individual unable to earn a living. In all these cases a formal certificate (Form 147) addressed to the commissioner of immigration is issued, and in accordance with the practice in force at this station the existence of such certificate makes it obligatory upon the immigration inspector to hold for the board of special inquiry every alien so certified.

(2) The remainder, constituting approximately 2,500 out of the 3,000 cases referred to above, presented on medical examination abnormal or defective conditions of less serious significance from the point of view of the administration of the immigration laws.

These cases are brought to the attention of the immigrant inspector by markings on the face of the passenger's identification card.

The identification cards now required at this port for cabin passengers are marked in a similar manner.

Whenever an alien's identification card is so marked it is understood that the immigrant inspector before whom the alien may come shall take the defect stated into account in passing upon the alien's right to land, but shall not regard the defect as necessarily constituting a sufficient reason for holding the alien for the board of special inquiry. Further explanation or advice regarding defects thus recorded on identification cards is given by the medical examiner upon request. Immigrant inspectors here are instructed to transcribe to columns 21 and 22 of the passenger manifest and on detention cards when issued any notation placed upon passengers' identification cards by the medical examiner and also to discharge no alien without an identification card until the case shall have been specially brought to the attention of the medical examiner. In order to avoid an unnecessary multiplication of special inquiry hearings, it is the practice of the examining medical officer at this station to bring all cases of uncomplicated senility, loss of one eye (the other eye being normal), deficiencies in physique of a minor degree, and instances of temporary debility from seasickness to the attention of the immigration officers in the manner just described rather than by formal certificates.

(3) In further connection with this matter of certification it may be stated that in instances of some obvious abnormality or defect of no practical significance, effort is made to see that the passenger's identification card shall be stamped accordingly.

The immigrant inspectors at this station are given to understand that any departure from the normal of body or mind on the part of an alien should receive appropriate recognition by the medical examiner in some one of the three ways just described, and they are encouraged to bring back for medical reexamination any alien whose mental or physical condition they may believe to have escaped the notice of the medical examiner.

Medical inspection.—The number of passengers^a covered by the medical examiner at this port during the past fiscal year was 110,462, made up of 53,665 cabin and 56,797 steerage passengers,^a and including in this number 80,017 aliens.^b

The four principal trans-Atlantic lines now bringing passengers are the Cunard, Leyland, White Star, and Allan lines. The first two dock at East Boston, the White Star at Charlestown, and the Allan Line near Chelsea. In each instance the steamship company merely has the use of wharves and sheds, which are owned, equipped, and controlled by a railroad company.

All cabin passengers are examined on shipboard. The second-cabin passengers, which occasionally reach the number of 300 on a ship, are made to pass a

^a On May 1 of this year the United States Immigration inspection of passengers from Canadian ports was transferred to the Canadian ports of departure.

^b The Immigration Bureau's report of immigration at this port gives only the number of aliens on whom the head tax is collected. Citizens of the Dominion of Canada and of the Republics of Mexico and Cuba and aliens in transit to foreign contiguous territory are exempt from the head tax, although they are in every other way subject to the immigration laws just as any other aliens.

line inspection like the steerage. Steerage passengers are examined in the space set apart for the purpose on the docks, except in the case of the Allan Line. These steerage passengers are examined on the ship's deck, as medical examination is a physical impossibility in the place on the dock provided for the purpose.^a

Former arrangements offered for the medical examination at the Cunard dock were remodeled early in 1903. The facilities now provided there for the primary line inspection are very satisfactory with respect to light and space, but the provisions for handling and examining those turned aside are wholly inadequate with the present class of travel. The conditions under which the medical examination must be conducted at the White Star Line dock are almost intolerable for passengers and medical examiner alike. Plans which would improve the conditions there were agreed to by the Boston and Maine Railroad, the owner of the property, over a year ago and incorporated in general plans for alterations in the dock. Work on these alterations, which since then it has been expected would commence from week to week, is not yet begun. In addition to the lines above mentioned and the Canadian lines, there is a regular passenger service from West Indian ports. Alien passengers in small number are also constantly arriving by various regular lines and by tramp ships.

Superiority in quality is no longer characteristic of the immigration at this port, and during the past year the inadequacy of the facilities for conducting the medical examination has been emphasized by the increasing numbers it has been found necessary at the line inspection to turn aside for special examination. On a recent ship 20 per cent of the total steerage passengers were thus "turned off the line." To some extent this low physical standard is the outcome of the extension of the business of the British lines into continental territory, but there also seems to be a decided increase in the physically and mentally defective from Great Britain and Ireland as well. With a slight decrease in total immigration, the number of certificate cases for the past year was 513, as compared with 308 for the previous year. This gain in certificate cases should not, however, be taken as measuring the extent of the deterioration in the immigration. Such deterioration would be better shown by the increased instances of physical inferiority, without actual disease, which claim the attention of the medical examiner and are turned over to the immigrant inspectors with notations on the identification cards, after the manner above described.

Under the stimulation of fines for bringing certain diseases, there has been a decided improvement (whether permanent or not remains to be seen) in the methods for securing a proper medical examination of prospective immigrants prior to embarkation. Examination processes have not only been improved at seaports of departure, but marked efforts have been made as well to insure more effective measures for eliminating unprofitable risks at interior booking points and central stations.

Most of the cases of easily discoverable diseases or more serious physical defects now found here on arrival have been accepted for passage as good business risks in spite of the disease or defect. Not infrequently such passengers are required to make a deposit of a sum sufficient in amount to pay the steamship company for the return passage in the event of permission to land being refused here, and in two recent instances of blepharitis and ectropion, due to old tear-duct trouble, it was found that deposits of \$100 had also been exacted to cover the fine in case the condition should be pronounced trachoma on arrival here.

The accuracy of the judgment of the representatives of the transportation lines in these matters is well shown by the fact that only about one-fifth of the certificate cases were actually excluded at this port during the year and that the total certificate cases deported, numbering 106, represented only one alien for every 800 landed. To accomplish this result it is also doubtless true that the transportation companies refused many risks which might have been profitably accepted for passage.

Trachoma.—That the increased prominence of the continental immigrant has been accompanied by no greater aggregate increase in trachoma cases is undoubtedly due to the recent improvement in medical examination at British ports. The liability to fines for bringing cases of this disease leads the representatives of the steamship companies throughout Europe to take few chances, and although it is customary for those concerned to refer all refused passage on account of abnormal appearance of the eyes as "trachoma cases" without

^a This dock has since burned.

qualification, many of them are unquestionably eye affections of a very temporary and trivial character. Many of these so rejected are subsequently accepted by the same or another line. In the latter instance notification of the sailing of a case of "trachoma" by a rival line is likely to reach us in advance of the passenger's arrival. I do not recall a single instance during the past year when such a case has turned out on arrival to be even suspicious. This policy at ports of embarkation with respect to eye affections has virtually eliminated at this port that type of cases whose diagnosis is sometimes a very difficult matter. Practically all cases of trachoma now being found here are well pronounced, suggesting either successful evasion of a medical examination at the port of embarkation or acceptance for passage because of belief of United States citizenship. This cautious policy perhaps also accounts for the remarkable infrequency among arrivals at this port of cases of mild catarrhal (?) conjunctivitis, which are apt to be so common among steerage passengers.

In further connection with this disease it may be observed that out of the 64 cases certified 16 were cabin passengers and 7 were either discovered stowaways or members of the crew foolishly applying for discharge instead of deserting.

Disposition of detained immigrants.—In connection with the annual report of detained immigrants, transmitted herewith, it will be observed that out of 521 certificate cases, representing only the worst instances of physical and mental shortcomings among those arriving during the year, 415 were released. The list of those released includes 32 out of the 64 cases of trachoma detained, and in explanation it may be stated that while probably, without exception, the 32 cases of trachoma released were immigrants, in that they had never been in the country before and were coming here for permanent settlement, they were able to show conclusively after arrival that they were either the wives or minor children of naturalized citizens of the United States, and therefore exempt from the application of the immigration laws. Others were unable to substantiate the same claims and were deported. No alien afflicted with trachoma was permitted to land or was held for treatment at this port during the year.

Out of 440 cases certified for conditions not specifically excludable by law, except as they might be regarded as aliens "likely to become a public charge," all but 70 were allowed to land.

Below are given the results in two groups of cases in which the condition certified practically precludes the possibility of self-support.

(1.)

	Certified.	Released.
Very defective vision (causes other than remediable refractive errors) ..	15	9
Blindness, total	7	7
Cataracts, both eyes	19	17
Chronic keratitis	12	10
Blindness, total and partial paralysis ..	1	1
Nearly blind and deafness ..	1	1
Defective vision and general debility ..	1	1
Glaucoma	1	1
Total	57	47

(2.)

	Certified.	Released.
Mentally unbalanced	9	2
Mental and physical weakness	8	4
Neurasthenia	4	8
Neurasthenia and diseased spinal cord ..	1	1
Paralysis, incomplete and mental deficiency ..	1	1
Spastic paralysis and mental deficiency ..	1	1
Hysteria	8	1
Imbecility	2	0
Imbecility and lameness ..	1	1
Mental dullness and chronic anemia ..	1	1
Total	34	17

In connection with the release of the above cases the following facts may be noted: In few, if any, of the cases cited did the matter of citizenship arise. Practically all were deemed by the legally constituted authority to be aliens lawfully entitled to admission into the United States. None was admitted on the judgment of an individual immigrant inspector. All came before a board of special inquiry, a good proportion came up to the Secretary of Commerce and Labor on appeal from an adverse decision of this board, and many were permitted to land only after the approval and acceptance by the Department of a bonded guaranty deemed sufficient by the Department to remove the possibility that the alien in question would become a public charge. The certificate of the examining medical officer furnished the means which enabled the immigration authorities to exact public protection in the shape of such bonded guaranty. In a good proportion of these cases, owing to maintenance charges pending final decision, no direct profit resulted to the steamship company from their acceptance for passage. The disposition made of these cases well illustrates the fact that physical or mental disability does not per se constitute a legal ground for excluding a person from landing. That such a large proportion of the seriously defective were landed is due to the fact that such defects are usually obvious and the persons are accepted for passage only because of good assurance that they will be able to overcome the obstacles in the way of their landing. The notations made on identification cards of less serious defective conditions, when combined with poor individual prospects, are perhaps more likely than formal certificates to serve as the factor which determines the exclusion of an alien, because less serious physical defects are more apt to be overlooked at the time of acceptance for passage.

Hospital cases.—During the past year 211 aliens have been sent to hospital on arrival or while under detention. The number of hospital cases for the previous year was 125. The immigration service at this port is as yet unable to secure either adequate quarters under its own control or a formal contract with local hospitals to care for aliens not yet landed. Arrangements for treatment are therefore still made separately in each case as it arises. Bills for hospital maintenance are rendered directly to the steamship company concerned. With respect to noncontagious cases no trouble has been found in securing prompt removal and good care for our cases, but it has thus far been found impossible to secure a prompt, businesslike arrangement for the removal and treatment of cases of contagious or communicable diseases, particularly those developing among the detained passengers. Owing to the necessity of making different arrangements for the various classes of cases, it has happened that for the greater portion of the year passengers detained by the medical examiner were to be found distributed in seven different institutions in this vicinity. Acute contagious diseases are, of course, left entirely to the hospital authorities, but in order that aliens "may be promptly landed or deported" the medical examiner is obliged to keep posted on the condition of patients in at least three or four different hospitals.

Landed cases.—During the past year 397 aliens who had been less than two years in the United States were reported to this office by the Massachusetts State board of charity to be inmates of various hospitals and institutions in this State. By virtue of a special contract between the State of Massachusetts and the United States, the latter, through the Bureau of Immigration, is liable for maintenance charges in such cases at the rate of \$5 per week. Each case so reported is investigated by the United States commissioner of Immigration at Boston, and bills are rendered through this office whether the alien may have entered the United States at this port or elsewhere. A majority of these cases are accidents or acute diseases. In cases of a chronic nature or of permanent disability the United States can only terminate its liability for maintenance charges by deporting the alien. As an alien can not be deported against his will, unless he has become a public charge from causes existing prior to landing, the medical aspect of these cases is often of considerable importance. It is the practice of the commissioner to refer these cases to me for opinion as to whether causes were prior or subsequent to landing. Generally the reports of the immigrant inspector who investigates the case and the statement of the attending hospital physician are sufficient to determine this matter. When information from these sources seems inconclusive I am accustomed, on the request of the commissioner, to visit the institution and make a personal investigation. Out of the 397 cases thus reported during the year, 186 landed at the port of New

York, 173 at the port of Boston, and 38 at various other ports of the United States or Canada. About 50 per cent of the total annual immigration to the State of Massachusetts enters the country at the port of Boston. Twenty-five of the above-mentioned cases landed at this port were deported as public charges from causes existing prior to landing. The reasons for deportation were reported as follows:

	Cases.
Insanity	10
Pulmonary tuberculosis	3
Epilepsy	1
Rheumatism	2
Pregnancy	3
Appendicitis	2
Laceration of pelvis	1
Hernia	1
Venereal disease	1
Typhoid fever	1
Total.....	25

In this connection it may be stated that out of the 397 cases reported 37 were cases of insanity, 24 having landed at New York, 11 at Boston, and 2 at other ports of entry. Probably other recently arrived aliens whose landing could not be verified became inmates of insane asylums in this State during the year. It is equally probable that few of those becoming insane had had previous attacks of insanity or presented definite symptoms of insanity at the time of arrival. Hundreds of arriving aliens may be seen at this port in the course of the year who show unmistakable signs of a poor nervous organization, yet without offering any definite symptoms on which an excluding decision could be based. Some of these meet in their new and strange environment conditions which prove too much for their mental balance, but the great majority never become insane.

Detention station.—During the past year the Immigration Bureau fitted up a portion of the second story of the wharf shed at Long Wharf to provide quarters for detained passengers, thus relieving the steamship companies of their custody. These quarters were first occupied early in March of this year. The primary immigration examination and the special inquiry hearings are gone through with at the various docks, just as formerly, but passengers then remaining detained are transferred to the detention station, with the exception of cases of contagious or communicable diseases. The commissioner still refuses to remove from the custody of the steamship company cases of trachoma, ringworm, or any other form of communicable disease except pediculosis.

During the months of March, April, and May it was found necessary to accommodate constantly at the detention quarters much larger numbers than previous experience at this port gave any reason to expect. During this time the health of the detained was notably bad. Forty-five were sent to hospital for various diseases, and cases of tonsillitis, bronchitis, and catarrhal conditions suggestive of an epidemic nature were continuously prevalent. The quarters were kept scrupulously clean and all blankets were subjected to a steam disinfection twice a week. The sickness seems attributable to overcrowding, overheating, and lack of ventilation. A roof garden has since been constructed and some other changes are contemplated which may improve the sanitary condition of the station.

A matter which also gave serious concern during the spring arose from the fact that no arrangement could be made with the municipal health authorities which would insure the removal of a contagious case before everybody else in the quarters was exposed to the disease. Effective isolation of a suspicious or contagious case within the limits of the space controlled by the immigration authorities is impossible and can not be made otherwise. Any increase in the height of the present structure is prevented by city ordinances.

Pursuant to section 808 of the Regulations of the Public Health and Marine-Hospital Service I have, whenever requested, given advice on sanitary matters relating to the detained, both prior and subsequent to the construction of the present detention quarters. I have also attempted to undertake the professional care of cases of sickness occurring in the detention quarters, but it is clearly

evident that I can not continue to do so without at times neglecting work directly connected with the medical inspection of arriving aliens.

I wish to take this occasion to express my appreciation of the constant efforts of the commissiouner, Col. George B. Billings, and his deputy, Mr. J. J. Hurley, to facilitate the work of the medical examination and to make it serve the purpose for which it is intended. It is only by their assistance and the intelligent cooperation of every Inspector attached to this station that I have been able to maintain an efficient medical examination under conditions that are often far from ideal.

Respectfully,

The SURGEON-GENERAL.

M. VICTOR SAFFORD,
Acting Assistant Surgeon.

[Inclosure.]

Report of inspection of aliens at port of Boston, Mass., during the year ended June 30, 1904.

Month.	Number in-spected.	Number certified.	Number de-ported.	Cause of deportation.
1903.				
July.....	6,274	50	9	Prohibited diseases, 3; likely to become public charges, 6.
August.....	7,974	61	17	Prohibited diseases, 5; likely to become public charges, 12.
September.....	12,586	54	6	Prohibited diseases, 3; likely to become public charges, 3.
October.....	8,334	56	15	Prohibited diseases, 8; likely to become public charges, 7.
November.....	4,400	27	3	Prohibited diseases, 0; likely to become public charges, 3.
December.....	2,740	12	5	Prohibited disease, 1; likely to become public charges, 4.
1904.				
January.....	1,808	25	9	Prohibited diseases, 2; likely to become public charges, 7.
February.....	2,885	19	10	Prohibited diseases, 6; likely to become public charges, 4.
March.....	7,487	30	7	Prohibited diseases, 3; likely to become public charges, 4.
April.....	11,926	60	10	Prohibited diseases, 3; likely to become public charges, 7.
May ^a	7,885	73	9	Prohibited disease, 1; likely to become public charges, 8.
June ^a	5,679	46	6	Prohibited disease, 1; likely to become public charges, 5.
Total.....	80,017	513	106	Prohibited diseases, 36; likely to become public charges, 70.

^a On May 1 the inspection of aliens from Canadian ports was transferred to the Canadian port of embarkation. Above figures for May and June do not include such aliens.

M. V. SAFFORD,
Acting Assistant Surgeon.

CHARLESTON.

Report of inspection of aliens at port of Charleston, S. C., during the year ended June 30, 1904, by Acting Asst. Surg. F. F. Sams.

Month.	Number in-spected.	Number certified.	Number de-ported.	Cause of deportation.
1903.				
July	0	0	0	Tubercle.
August	5	0	0	
September	2	0	0	
October	1	0	0	
November	1	1	1	
December	0	0	0	
1904.				
January	7	1	1	Valvular disease of heart.
February	8	0	0	
March	1	0	0	
April	0	0	0	
May	0	0	0	
June	0	0	0	
Total	25	2	2	

F. F. SAMS,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

EAGLE PASS.

Report of inspection of aliens at port of Eagle Pass, Tex., during the year ended June 30, 1904, by Acting Asst. Surg. Lea Hume.

Month.	Number in-spected.	Number certified.	Number de-ported.	Cause of deportation.
1903.				
July	110	5	5	Trachoma, 4; blind, 1.
August	150	15	15	
September	105	8	8	Trachoma, 2; tuberculosis, 7; cripple, 1; epithelioma, 1; paralysis, 1; pertussis, 1; deaf, 1; idiocy, 1.
October	109	8	8	Tuberculosis, 1; deaf, 1; senile, 1.
November	122	7	7	Trachoma, 1; idiocy, 2.
December	102	2	2	Trachoma, 3; feeble-minded, 2; lunatics, 2. Senile, 1; trachoma, 1.
1904.				
January	130	8	8	Acute conjunctivitis, 1; trachoma, 8; blind, 1; idiocy, 1; lunacy, 1; leprosy, 1.
February	147	8	8	Trachoma, 1; blind, 2; paralysis, 1; deaf, 1; lunacy, 2; senile, 1.
March	123	5	5	Trachoma, 1; blind, 1; tuberculosis, 1; senile, 2.
April	164	19	19	Trachoma, 16; feeble-minded, 1; lunacy, 1; senile, 1.
May	162	5	5	Cripple, 2; lunacy, 1; senile, 2.
June	195	16	16	Blind, 2; cripple, 3; feeble-minded, 1; lunacy, 2; senile, 8.
Total	1,619	96	96	

LEA HUME,
Acting Assistant Surgeon, in Charge.

Respectfully,
The SURGEON-GENERAL.

EL PASO.

REPORT BY ACTING ASST. SURG. E. ALEXANDER.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
El Paso, Tex., June 30, 1904.

SIR: I have the honor to transmit herewith summary of inspection of immigrants at this port from July 1, 1903, to June 30, 1904.

	Mex- icans.	Syrians.	Chinese.	Mex- icans in bond.	Deten- tions.	Re- turned.
1903.						
July	349	2			12	
August	496	6			3	
September	413	9			12	
October	377	9			8	1
November	352			15		2
December	364	17	1	66		
1904.						
January	327	1		313		
February	297	7		258		
March	171	11		188	4	
April	324				2	
May	26	2				
June	297		1			
Total	3,793	64	2	840	41	3

Detentions from one to three days; having arrived during the prevalence of yellow fever and smallpox in Mexico, and being out less than five days from the infected points.

Respectfully,

E. ALEXANDER,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

KEY WEST.

Report of immigrants inspected at the port of Key West, Fla., during the fiscal year ended June 30, 1904, by Passed Asst. Surg. C. H. Gardner.

Month.	Number inspected.	Number certified.	Number deported.	Cause for deportation.
1903.				
July	0	0	0	
August	0	0	0	
September	0	0	0	
October	0	0	0	
November	0	0	0	
December	1	0	0	
1904.				
January	5	2	2	Class II (1), Class IV (1).
February	2	1	1	Class IV.
March	1	1	1	Class IV.
April	1	1	1	Class IV.
May	752	5	1	Class I.
June	4	1	0	
Total	766	11	6	

C. H. GARDNER,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

LAREDO.

Report of inspection of aliens at port of Laredo, Tex., during the year ended June 30, 1904, by Acting Asst. Surg. H. J. Hamilton.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
1903.				
July.....	215	10	10	Trachoma, 6; catarrhal ophthalmia, 2; amaurosis (right eye), pannus (left eye), 1; left eye destroyed, meibomian cyst of lid, 1.
August.....	320	17	17	Trachoma, 6; gonorrhea, 3; catarrhal ophthalmia, 3; loss of 1 eye, senile debility, 2; alcoholism, senility, 1; juvenile age, 1; ankylosis right elbow, ankylosis fingers right hand, 1.
September.....	73	2	2	Trachoma, 2.
October.....				Nothing to report.
November.....	3	2	2	Trachoma, 1; gonorrhea, 1; total, 2.
December.....	56	5	5	Trachoma, 3; alcoholism, 1; favus, 1.
1904.				
January.....	163	2	2	Idiocy (congenital), 1; amaurosis, 1.
February.....	99			Nothing to report.
March.....	150			Do.
April.....	128	4	4	Trachoma, 4.
May.....	61			Nothing to report.
June.....	75	5	5	Trachoma, 4; blind and partial paralysis left side, 1.
Total.....	1,325	47	47	

H. J. HAMILTON,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

LOS ANGELES.

Report of inspection of aliens at port of Los Angeles, Cal., during the year ended June 30, 1904, by Acting Asst. Surg. M. H. Ross.

Inspected ----- 1,081
Deported ----- 0

M. H. ROSS,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

MALONE.

Report of inspection of aliens at port of Malone, N. Y., during the year ended June 30, 1904, by Acting Asst. Surg. S. D. Williamson.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
1903.				
July.....				
August.....				
September.....	106	4	2	Trachoma, 2.
October.....	100	10	9	Pulmonary tuberculosis, 1; trachoma, 8.
November.....	180	7	5	Trachoma, 5.
December.....	32	1	1	Trachoma, 1.
1904.				
January.....	45	0	0	
February.....	31	0	0	
March.....	12	0	0	
April.....	53	0	0	
May.....	48	1	1	Trachoma, 1.
June.....	80	2	1	Trachoma, 1.
Total.....	697	25	19	

S. D. WILLIAMSON,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

MOBILE.

Report of inspection of aliens at the port of Mobile, Ala., during the year ended June 30, 1904, by Acting Asst. Surg. J. Grey Thomas, jr.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
1903.				
July.....	5	5	.....
August.....	6	6	.....
September.....	3	3	.....
October.....	1	1	.....
November.....	14	14	.....
December.....	10	10	.....
1904.				
January.....	11	11	.....
February.....	33	33	.....
March.....	53	53	.....
April.....	35	35	.....
May.....	45	45	.....
June.....	24	24	.....
Total.....	240	240	.....

J. GREY THOMAS, Jr.,
Acting Assistant Surgeon in temporary charge.

The SURGEON-GENERAL.

NEW ORLEANS.

Report of inspection of aliens at port of New Orleans, La., during the year ended June 30, 1904, by Surg. C. P. Wertenbaker.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
1903.				
July.....	68	1	1	Suppurative inflammation of middle ear, and poor physique.
August.....	70	0	0	
September.....	131	0	0	
October.....	2,235	17	0	
November.....	239	4	2	Suppurating wound right forefinger, 1; lameness; recent fracture of wrist, 1.
December.....	101	1	0	
1904.				
January.....	130	0	0	
February.....	508	7	0	
March.....	234	3	0	
April.....	203	0	0	
May.....	1,028	5	1	Favus of scalp.
June.....	204	0	0	
Total.....	5,232	38	4	

* Patient at Charity Hospital landed within one year, ordered deported, but escaped from hospital.

† One case of trachoma certified and ordered deported escaped.

‡ Two more cases ordered deported, but escaped.

C. P. WERTENBAKER, Surgeon.

The SURGEON-GENERAL.

NEW YORK.

Report of inspection of aliens at port of New York during the year ended June 30, 1904, by Surg. George W. Stoner.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.										
				Class I.		Class II.		Class III.		Class IV.				
				Trachoma.	Tubercle of lung.	Insanity.	Idiocy.	Epilepsy.	Favus.	Syphilia.	Gonorrhea.	Extensive chancroids.	All other diseases and injuries.	
1903.														
July.....	49,214	480	274	179	2					6	1		1	36
August.....	49,894	491	130	54		2	1			2		1	1	30
September.....	57,758	525	97	37	1	2				3				54
October.....	60,482	478	93	61		1				1				30
November.....	53,277	410	92	42		1	2			1				46
December.....	34,237	276	62	41		2					1	1		14
1904.														
January.....	23,129	241	61	47				1			1			12
February.....	28,067	316	54	32	1	1				2	1			17
March.....	65,316	390	118	55	1	3	4	1	5	2				47
April.....	73,177	361	168	107		5	3		4					49
May.....	79,700	361	100	58	2	2		1	3					34
June.....	59,560	473	119	49	3	3	2		1	1	1			68
Total.....	638,811	4,802	1,368	756	10	22	12	3	28	7	3	2		255

GEORGE W. STONER, *Surgeon in Command.*

The SURGEON-GENERAL.

NOGALES.

Report of inspection of aliens at the port of Nogales, Ariz., during the year ended June 30, 1904, by Acting Asst. Surg. A. L. Gustetter.

Inspected..... 1,202
Rejected..... 16

A. L. GUSTETTER,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

PHILADELPHIA.

REPORT BY ASST. SURG. W. A. KORN.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Philadelphia, Pa., July 1, 1904.

SIR: I have the honor to forward a report of the transactions at this station for the fiscal year ended June 30, 1904, as follows:

Immigrants inspected..... 19,739
Immigrants certified..... 264
Immigrants deported..... 24

Causes of deportation and number of cases.

Trachoma	11
Favus	2
Pulmonary tuberculosis	1
Hernia	2
Poor physique	2
Burns of chest	1
Locomotor ataxia	1
Orchitis	1
Valvular disease of the heart	1
Varicocele	1
Feeble-minded	1

In addition to the above, the following:

Landed immigrants examined at office	74
Landed immigrants examined at hospital	435
Total number of times that cases at hospital were visited	1,572

Respectfully,

W. A. KORN, *Assistant Surgeon.*

Respectfully forwarded.

FAIRFAX IRWIN, *Surgeon.*

PORT TOWNSEND.

Report of inspection of aliens at port of Port Townsend quarantine from January 1 to June 30, 1904, by Passed Asst. Surg. J. H. Oakley.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
1903.				
July				
August				
September				
October				
November				
December				
1904.				
January	477	14		
February	316	4		
March	164	6		
April	153	5		
May	80	3		
June	488	6		
Total	1,678	38		

J. H. OAKLEY,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

RICHFORD.

Report of inspection of aliens at port of Richford, Vt., during the year ended June 30, 1904, by Acting Asst. Surg. J. H. Hamilton.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
1903.				
July.....				
August.....	33	1	1	Trachoma.
September.....	47	0	0	
October.....	12	0	0	
November.....	14	0	0	
December.....	8	1	1	Do
1904.				
January.....	4	0	0	
February.....	8	0	0	
March.....	1	1	1	Do.
April.....	7	0	0	
May.....	4	0	0	
June.....	5	1	1	Do.
Total.....	138	4	4	

J. H. HAMILTON, *Acting Assistant Surgeon.*

The SURGEON-GENERAL

SAN FRANCISCO.

REPORT BY ASST. SURG. C. E. D. LORD.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

OFFICE OF MEDICAL OFFICER IN COMMAND,

San Francisco Quarantine Station, Angel Island, Cal., June 30, 1904.

SIR: I have the honor to transmit herewith report of the medical inspection of immigrants for the fiscal year ended June 30, 1904.

I would respectfully call attention to the fact that a majority of the cases of trachoma were among Chinese en route to Mexico, Panama, Peru, and British Columbia, and that no attempt was made by the steamship companies to keep such aliens separate, while on board ship, from those destined to the United States and who had been carefully inspected at port of departure by medical officers of this Service, so as to prevent the embarkation of persons afflicted with this disease. Such "transit" aliens were transhipped at San Francisco to American vessels and carried to their destinations.

This recognized procedure must, in great measure, nullify the effect of foreign medical inspection on the Pacific so far as dangerous contagious diseases are concerned, as this transit disease must be as contagious for persons bound direct to the United States as any other trachoma.

I would state that much difficulty has been experienced in completing medical examinations, especially in cases of suspected trachoma and tubercle of the lungs, owing to the stand taken by the commissioner at this port—that the medical inspector has no right to detain aliens for the purpose of observation more than a few days, because no accommodations have been provided; on this account several cases detained for diagnosis for disease of the eyes and disease of the skin have been discharged by the inspectors before a reexamination could be made.

The conditions existing at San Francisco render it necessary for the medical inspector to conduct immigrant medical inspection in conjunction with that of the Federal quarantine officers, so as to cause the least possible delay to commerce. Advantage is taken of the glandular examination made by these officers to discover hernia, varicose veins, and eruptions otherwise concealed by the clothes.

I would respectfully state that, at the request of the commissioner, the crews of all foreign vessels and seamen on American vessels shipped at foreign ports are examined upon arrival and a provisional certificate, upon which are noted

the names of such seamen as are ineligible for landing under the immigration laws, rendered. Upon presentation of this certificate within a week after arrival, seamen not noted on the certificate are passed by the immigration officials without second medical examination. If, however, more than a week has elapsed, all seamen desiring discharge are referred to the medical officer for examination. This procedure doubles the number of inspections at this station and renders daily duty from sunrise to sunset a necessity.

I have the honor to state that it has been impossible for me to render a complete report on "Number deported," because of my inability to obtain such data from the office of the commissioner.

Respectfully,

C. E. D. LORD,
Assistant Surgeon.

The SURGEON-GENERAL.

Respectfully forwarded, approved.

HUGH S. CUMMING,
Passed Assistant Surgeon, in Command.

[Inclosure.]

Report of inspection of aliens at port of San Francisco, Cal., during the year ended June 30, 1904.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
1903.				
July.....	1,251	34	-----	
August.....	1,257	27	-----	
September.....	1,755	37	-----	
October.....	1,378	37	-----	
November.....	1,639	60	-----	
December.....	1,568	76	-----	
1904.				
January.....	1,063	17	-----	
February.....	962	23	4	Trachoma, 2; syphilis, 2.
March.....	941	13	5	Trachoma, 3; syphilis, 1; insanity, 1.
April.....	1,443	17	1	Syphilis.
May.....	2,186	22	4	Trachoma, 3; tubercle of lungs, 1.
June.....	1,550	24	-----	
Total.....	16,968	387	14	

Class "A" certificates, 255, of which 208 were for trachoma, 3 tubercle of lungs, 4 syphilis, 36 scabies, 4 insane. Class "B" certificates, 132.

SEATTLE.

Report of inspection of aliens at port of Seattle, Wash., during the year ended June 30, 1904, by Asst. Surg. J. W. Amessee.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
1903.				
July.....	180	-----	-----	
August.....	166	-----	-----	
September.....	193	-----	-----	
October.....	624	3	2	Jaundice, 1; trachoma, 1.
November.....	640	3	3	Trachoma, 3.
December.....	621	5	3	Trachoma, 5.
1904.				
January.....	380	2	2	Loss of left eye, 2.
February.....	219	3	3	Gonorrhea with bubo, 1; inguinal hernia, 1; chronic deafness, 1.
March.....	18	1	1	Syphilis, 1.
April.....	-----	-----	-----	
May.....	1	1	1	Trachoma, 1.
June.....	257	1	1	Do.
Total.....	3,129	19	18	

J. W. AMESSEE, Assistant Surgeon.

The SURGEON-GENERAL.

PORTO RICO.

SAN JUAN AND SUPPORTS.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
San Juan, P. R., July 2, 1904.

SIR: I have the honor to submit the following report of medical inspections of immigrants at San Juan, P. R., during the fiscal year ended June 30, 1904:

Total number of immigrants inspected.....	1,355
Total number of immigrants passed.....	1,348
Total number certified on account of dangerous, contagious, or loathsome diseases:	
Class III (deported)	1
Class IV (landed)	6
Total	7

Respectfully,

PEDRO DEL VALLE ATILES,
Acting Assistant Surgeon.

Respectfully forwarded.

W. W. KING,
Passed Assistant Surgeon

The SURGEON-GENERAL

[Supports.]

Summary of inspection of immigrants at the six supports of Porto Rico during the fiscal year ended June 30, 1904.

Mayaguez:	
Immigrants inspected.....	117
Passed	117
Rejected	0
Humacao:	
Immigrants inspected.....	2
Passed	2
Rejected	0
Arecibo:	
Immigrants inspected.....	1
Passed	1
Rejected	0

No transactions at the other three supports.

PONCE.

REPORT BY ACTING ASST. SURG. J. F. TORRES.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Ponce, P. R., July 6, 1904.

SIR: In accordance with paragraph 646, Revised Regulations, Marine-Hospital Service, I have the honor to make the following report of medical inspection of immigrants at this port during the fiscal year ended June 30, 1904:

Inspected	321
Passed	316
Rejected	5

Very respectfully,

JULIO FERRER TORRES,
Acting Assistant Surgeon.

OFFICE CHIEF QUARANTINE OFFICER FOR PORTO RICO,
San Juan, P. R., July 7, 1904.

Respectfully forwarded to the Surgeon-General, United States Public Health and Marine-Hospital Service, Washington, D. C.

PEDRO DEL VALLE ATILES,
Acting Assistant Surgeon, in temporary charge.

The SURGEON-GENERAL.

HAWAII.

HONOLULU.

Schedule, by months, of inspection of aliens at port of Honolulu, Hawaii, during the year ended June 30, 1904, by Passed Asst. Surg. L. E. Cofer.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
1903.				
July.....	577	9	9	Trachoma.
August.....	419	6	6	Do.
September.....	425	3	2	Trachoma, 1; leprosy, 1.
October.....	472	7	8	Trachoma, 6; syphilis, 1; beriberi, 1.
November.....	606	1	0	Certified trachoma; escaped.
December.....	647	0	0	
1904.				
January.....	426	0	0	
February.....	757	0	0	
March.....	1,286	9	9	Trachoma.
April.....	1,202	9	9	Do.
May.....	831	8	6	Trachoma, 5; varicose ulcers legs and ankylosis ankle, 1; 1 senility and general debility and 1 curvature spine admitted.
June.....	1,834	6	5	Trachoma, 5; 1 loss right four fingers admitted.
Total.....	9,471	58	54	

L. E. COFER,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

PHILIPPINES.

REPORT BY PASSED ASST. SURG. V. G. HEISER ON IMMIGRATION AT MANILA AND SUBPORTS.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
 OFFICE CHIEF QUARANTINE OFFICER FOR THE PHILIPPINE ISLANDS,
Manila, P. I., August 5, 1904.

SIR: In accordance with the instructions contained in Bureau letter of March 18, 1904, I have the honor to transmit herewith the official blank forms of the medical inspection of immigrants at the ports of the Philippines for the fiscal year ended June 30, 1904.

The first systematic and official medical inspection of immigrants began July 1, 1903, and was done at the request of the Insular collector of customs, who represents the United States Immigration Service in the Philippines. The immigrant medical inspection is made on the deck of the vessel immediately after the quarantine inspection is concluded. The climate is so mild that it is possible to do this, but it would be much more satisfactory if better facilities could be provided. All those that are passed by the medical officer then go before the immigration officer, and if passed by him they go ashore. All those immigrants who have not passed the medical inspection are then examined a second time, in the presence of the medical officer in charge. For all those failing to pass

this last examination the regulation certificate is issued, signed by the medical officer in charge and initialed by all the medical officers who have seen the case. The rejected immigrants are then turned over to the immigrant authorities. By this method rejected immigrants are speedily returned to the port from whence they came, and they seldom ever have an opportunity to leave the vessel while it is in a port of the Philippines.

Immigrants are brought to Manila by ten different steamship lines. A number of instances have already come under observation in which an immigrant would be deported on one line and return several times subsequently on other lines, only to be again deported. The great majority of immigrants arrive by the trans-Pacific steamers, which make Japanese ports a place of call while en route to Manila.

The total number of immigrants inspected during the fiscal year was 6,111; total number of rejections for medical causes, 351; total number of persons ordered deported on account of being medically rejected, 346; percentage of rejections, 5½ per cent.

Several facts, which differ entirely from the experience at other stations, are shown by the foregoing figures. First, the number of rejections for medical causes is exceedingly high, when it is considered that all aliens not likely to be permitted to land in the Philippines are already supposed to have been advised not to embark by the Service officers stationed at ports from which the immigrants come; second, the number of immigrants ordered deported for medical cause closely corresponds to the number of medical certificates issued. This shows that the diseases for which the immigrants are rejected in all probability belong to one of the absolutely excludable classes. On examination of the medical report it will be seen that this observation is borne out by the fact that nearly all the rejections have been made on account of trachoma. At first sight it might seem that in the examination of 6,111 immigrants many other more or less grave physical defects should have been detected. But when it is remembered that, with the exception of an insignificant few, the entire immigration that comes to the Philippines is Japanese; that they are nearly all male adults in the prime of life, and that this race of people are noted for their sound physique, the matter assumes a new aspect. Another important consideration is the fact that the tide of immigration to the Philippines has only begun, and the history of all peoples shows that when immigration to another country begins, at first only the more hardy members immigrate. After they establish themselves the weaker ones follow.

Respectfully,

VICTOR G. HEISER,
Passed Assistant Surgeon,
Chief Quarantine Officer for the Philippine Islands.

The SURGEON-GENERAL.

[Inclosures.]

Report of inspection of aliens at the various ports of the Philippine Islands during the year ended June 30, 1903.

MANILA, P. I.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
1903.				
July	195	1	0	
August	237	0	0	
September	190	0	0	
October	664	7	7	Heart disease, valvular, aortic, 1; trachoma, 6.
November	694	48	48	Heart disease, organic, 1; trachoma, 35; trachoma, 12 (?).
December	498	46	46	Trachoma, 46.
1904.				
January	237	41	41	Trachoma, 31; trachoma, 10 (?).
February	270	29	29	Trachoma, 29.
March	1,306	38	38	Trachoma, 38.
April	230	32	32	Trachoma, 31; syphilis, 1.
May	291	27	25	Trachoma, 25.
June	533	77	77	Trachoma, 77.
Total.....	5,437	346	343	

Report of inspection of aliens, etc.—Continued.

CEBU, P. I.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
1903.				
July.....	1	0	0	
August.....	0	0	0	
September.....	0	0	0	
October.....	1	0	0	
November.....	0	0	0	
December.....	1	0	0	
1904.				
January.....	3	0	0	
February.....	1	0	0	
March.....	0	0	0	
April.....	0	0	0	
May.....	0	0	0	
June.....	9	0	0	
Total.....	16	0	0	

ILOILO, P. I.

1903.				
July.....	25			
August.....	22			
September.....	17			
October.....	1			
November.....	1			
December.....	1			
1904.				
January.....	39			
February.....	10			
March.....	29			
April.....	44	1	0	
May.....	70	4	3	Trachoma, 2; ulcer of skin, feet; chronic 1.
June.....	18			
Total.....	277	5	3	

JOLO, P. I.

1903.				
July.....	0	0	0	
August.....	173	0	0	
September.....	17	0	0	
October.....	42	0	0	
November.....	9	0	0	
December.....	24	0	0	
1904.				
January.....	17	0	0	
February.....	20	0	0	
March.....	8	0	0	
April.....	18	0	0	
May.....	31	0	0	
June.....	22	0	0	
Total.....	381	0	0	

CANADA.

QUEBEC.

REPORT BY ASST. SURG. W. C. BILLINGS.

Report of inspection of aliens at the port of Quebec, Canada, during the year ended June 30, 1904.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
1903.				
July.....	2,200	81	30	Neurasthenia, 1; trachoma, 26; undersized, 1; senility and debility, 1; hip-joint disease, 1.
August.....	1,918	79	19	Poor physique, 3; trachoma, 14; partially deaf, 1; lateral curvature spine, 1.
September.....	1,715	43	7	Trachoma, 4; poor physique, 1; favus, 1; observation for favus, 1.
October.....	1,547	55	8	Trachoma, 3.
November.....	1,324	37	9	Trachoma, 5; hysteria, 1; poor physique, 1; syphilis, 1; favus, 1.
December.....	815	30	16	Trachoma, 16.
1904.				
January.....	511	19	6	Trachoma, 5; poor physique, 1.
February.....	531	25	1	Favus, 1.
March.....	504	11	3	Trachoma, 1; dislocation shoulder, 1; insular sclerosis, 1.
April.....	253	11	1	Tuberculous glands neck, 1.
May.....	1,311	40	7	Adenitis glands neck, 1; trachoma, 6.
June.....	1,143	64	1	Pityriasis, 1.
Total.....	13,772	495	103	

W. C. BILLINGS, *Passed Assistant Surgeon.*

The SURGEON-GENERAL.

VANCOUVER.

Report of inspection of aliens at port of Vancouver for three months ended June 30, 1904, by Acting Asst. Surg. H. W. Riggs.

Month.	Number inspected.	Number certified.	Number excluded.	Cause of deportation.
April (6-30).....	13	0	0	
May.....	403	39	38	Class I, 38.
June.....	607	5	4	Class I, 4.
Total.....	1,113	44	42	

VICTORIA.

Report of inspection of aliens at port of Victoria, British Columbia, during seven months ended June 30, 1904, by Asst. Surg. M. W. Glover.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
1903.				
December.....	200	6	5	Class I, 4; Class IV, 1.
1904.				
January.....	200	8	7	Class I, 5; Class III, 1; Class IV, 1.
February.....	108	7	6	Class I, 4; Class IV, 2.
March.....	264	20	14	Class I, 13; Class III, 1.
April.....	261	17	12	Class I, 12.
May.....	164	8	3	Class I, 2; Class IV, 1.
June.....	403	20	14	Class I, 10; Class III, 1; Class IV, 3.
Total.....	1,000	86	61	Class I, 50; Class III, 3, Class IV, 8.

ITALY.

NAPLES AND PALERMO.

REPORT BY PASSED ASST. SURG. J. M. EAGER.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Naples, Italy, July 1, 1904.

SIR: I have the honor to make the following report of the transactions of the Service at the ports of Naples and Palermo, covering the period from July 1, 1903, to June 30, 1904, inclusive:

Statistics of the Service at Naples and Palermo.

Month.	Ships.	Number of emigrants.		Baggage.	
		Naples.	Palermo.	Inspected.	Disinfectcd.
1903.					
July	14	8,087	752	1,650	13,738
August	15	9,511	1,355	1,830	16,226
September	19	10,678	3,089	2,090	19,893
October	19	11,990	1,290	2,727	19,144
November	19	9,411	1,147	2,090	15,722
December	12	4,715	442	885	7,551
1904.					
January	17	4,029	754	771	6,627
February	19	12,729	1,571	1,210	17,922
March	32	33,012	1,400	3,169	44,393
April	27	25,443	1,569	3,585	35,671
May	18	13,737	714	2,330	19,222
June	18	7,463	699	1,756	13,762
Total	229	150,755	14,782	24,083	229,899

Rejections advised.

Months.	Trachoma.	Favus.	Ringworm.	Smallpox.	Measles.	Fever.	Other causes.	Total.
1903.								
July	464	25					16	505
August	541	16			1	3	13	574
September	634	19					18	671
October	451	16	1				5	473
November	313	10				1	1	325
December	195	2					2	199
1904.								
January	220	7			1		1	229
February	367	15		1		1	7	391
March	568	49	2		2		10	631
April	475	37	3				4	520
May	319	17	2	1	1	1	4	345
June	338	14		1		1	8	362
Total	4,885	227	8	3	5	8	89	5,225

During the period covered by the report 355 persons were embarked at the ship's responsibility, the facts in each case being sent to the receiving officer at the port of arrival. These persons were individuals the subjects of some disease or deformity, such as berula, that would not necessarily prevent their entering at the port of arrival.

EMIGRATION FROM ITALY.

Approximately half a million of Italians go abroad every year in search of work, nearly half of them to the United States. A considerable proportion returns to Italy. The official reports of the Italian commissioner-general of emigration for 1903 show that during the calendar year 214,157 Italians went to the United States, and during the same period 78,233 returned to Italy from the United States. In 1902 the number of Italians departing was 191,767, and the number returning 52,000.

Emigration is an important feature of Italian life and the movement is on the increase. This may be seen from the following official figures: In 1881 there were 1,032,392 Italian emigrants living abroad; 1,983,206 in 1891, and 3,439,014 in 1901. Of the number 3,439,014 for the latter year, about 654,000 were scattered throughout Europe; 168,000 were in Africa; 729,000 in the United States; 1,100 in Canada; 500 elsewhere in North America, and 1,852,000 in South America, of which number 618,000 were in Argentina and 1,100,000 in Brazil.

The figures quoted show how extensive a movement Italian emigration has become, and without proper sanitary control how easy a medium it might be for the propagation of those diseases and defects peculiar to the Italian lower classes, conditions which have already been considered in previous annual reports for this station.

In recent years emigration from Naples to the United States has been decidedly on the increase. The inspection records of the Public Health and Marine-Hospital Service show that during the fiscal year 1899-1900 the number of emigrants bound for the United States was 82,601; 109,208 in 1900-1, 145,447 in 1901-2, 180,011 in 1902-3, and 150,755 during the year just completed.

In regard to the character of Italian emigrants the following is part of a report which I prepared on request of United States Consul Byington, Naples.

EMIGRANTS NEARLY ALL PEASANTS.

Nearly the entire mass of emigrants from Naples is composed of peasants from southern Italy. Among them are seen from time to time northern Italians, Greeks, and natives of countries to the east of Italy. There is a notable increase of late years in the number of Greeks sailing from Naples. The average Italian emigrant, though he has previous to leaving Italy been entirely devoted to agricultural work, adapts himself readily to any labor not calling for higher qualities than muscular force, quick apprehension, and willingness to work. An inclination in favor of laboring in the construction of great engineering works is noticeable among southern Italians, probably arising from the fact that in former times large numbers of these peasants were employed throughout Italy in the construction of railroads, enterprises which, owing to the character of the country, called for huge operations, as tunneling and bridge building, requiring the services of armies of laborers. There is always among the emigrants from southern Italy, especially from Naples, Calabria, Cosenza, and the Province of Salerno, a small proportion of stonecutters and quarrymen. Among the emigrants from all parts of southern Italy there is always found a certain number of tailors, cobblers, barbers, and makers of musical instruments, especially string instruments, such as the guitar and mandolin.

In regard to the moral and intellectual status of those going to the United States from Naples, it can be said that the average emigrant from this port is a fair representative of the Italian peasant. Intellectually he is willing and quick to learn, but is deplorably ignorant. In 1867 the proportion of Italians who could not read was 78 per cent, and in 1881, when the census was made, it was 67 per cent. This shows an increase in education which is in all probability due to increased educational advantages in cities, a condition which does not concern in any important degree the Italian emigrant.

The improvement is much more marked in the north of Italy than in the south. The great majority of the emigrants are Roman Catholics. It is believed that there are very few paupers or beggars among the Naples emigrants. They are generally poor people who earnestly desire an opportunity to

earn an honest living. As to their morality, it is that of the ignorant and emotional lower classes of their race. It is, however, difficult for any criminal to leave Naples for the United States. The Italian emigration commission exercises a rigid control of this matter.

At the beginning of summer the bulk of emigrants from Naples consists of men; toward autumn the women leave to join the male members of their families at the conclusion of what is presumably a successful summer's work.

Although the average Italian peasant is comparatively undersized, he is muscular, hardy, and fit for the performance of heavy manual labor. His healthful appearance is often masked by a skin tanned by exposure to the sun. Another circumstance that often gives an unfavorable appearance to emigrants from the littoral of southern Italy is what is known as "black teeth," a disfiguration rather than a disease, since it is not necessarily accompanied by decay of the teeth. The teeth of these persons are affected during the period of growth by some gaseous constituent of drinking water, probably from impregnation with volcanic vapors. The defect often gives a sinister look to an otherwise handsome face, but fortunately does not, it seems, affect the strength or durability of the teeth.

Many of the emigrants have had military training; in general, all the men over 20 years of age have performed more or less military duty. In Italy all males not having physical defects rendering them unfit are subject to regular military duty, the exceptions being only sons, the first-born sons of widowed mothers, and the sons of fathers over 60 years of age when there is a brother in the mother's arms. Even these excepted individuals are held to some service, but it is generally limited to twenty or thirty days at a time. As to habits of cleanliness of the person and dress, there is much left to be desired. An absence of the habit of bathing is evident, and the emigrants who present themselves for departure almost invariably carry cheese and sausages concealed upon their persons.

The Italian emigrant has been accustomed in most cases to eat the simplest food, chiefly fruit and greens; he is sober, but almost always drinks wine in moderation. In very exceptional cases when given to drink in excess he is very likely to become boisterous and even dangerous.

Respectfully,

J. M. EAGER,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

JAPAN.

YOKOHAMA.

REPORT OF MEDICAL INSPECTION OF ALIEN EMIGRANTS AT YOKOHAMA, JAPAN,
DURING THE PERIOD SEPTEMBER 22, 1903, TO JUNE 30, 1904, BY ASST. SURG.
DUNLOP MOORE.

Aliens inspected	9,538
Aliens suffering from loathsome or dangerous contagious diseases recommended for rejection	620
Aliens certified as free from loathsome or dangerous contagious diseases.	7,258

Respectfully,

D. MOORE, *Assistant Surgeon.*

The SURGEON-GENERAL.

KOBE.

REPORT OF INSPECTION OF ALIENS AT PORT OF KOBE, JAPAN, DURING THE YEAR
ENDED JUNE 30, 1904, BY ACTING ASST. SURG. J. B. FOWLER.

Month.	Number inspected.	Number passed.	Number rejected.	Cause of rejection.
1903.				
July.....		311		
August.....		195		
September.....		178		
October.....		449		
November.....	518	441	77	Trachoma, 71; high fever, 8; tuberculosis, 1; syphilis, 1; favus, 1.
December.....	429	298	131	Trachoma, 128; tuberculosis, 1; scabies, 1; senile decay, 1.
1904.				
January.....	428	407	21	Trachoma, 21.
February.....	424	393	31	Trachoma, 31.
March.....	511	430	72	Trachoma, 72.
April.....	625	508	117	Trachoma, 111; high fever, 2; tuberculosis, 2; scabies, 1; corneal ulcer, 1.
May.....	586	553	33	Trachoma, 33.
June.....	1,033	756	277	Trachoma, 272; scabies, 2; high fever, 1; tuberculosis, 1; deformity, 1.
Total.....	4,554	4,028	750	

This report does not include any way passengers, but only Japanese and Koreans taken on at Kobe.

J. BUCKNILL FOWLER,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

CHINA.

HONGKONG.

REPORT OF MEDICAL INSPECTION OF ALIENS AT HONGKONG BY PASSED ASST. SURG.
M. J. WHITE.

From the commencement of the work in October, 1903, 4,168 aliens were examined for the communicable diseases contemplated in the laws governing immigration.

The aliens having bathed, were carefully examined for trachoma, tuberculosis, venereal diseases, leprosy, scabies, ringworm, favus, etc. While phtheiiriasis and chromaphytosis were of frequent occurrence, the aliens afflicted were not rejected, because the steam disinfection of clothing and the bath removed the lice, and the mildness, perhaps insignificance, of tinea versicolor seemed hardly sufficient to warrant their classification for immigration purposes as loathsome or dangerous contagious diseases, although etiologically and clinically they are grouped, the one with scabies, the other with ringworm and favus. Several cases of eczema, leucoderma, and ichthyosis were observed but not rejected.

The majority of trachoma cases were without complications and in only a few was entropion present, and then not to the degree of causing trichiasis. Trachoma among the Chinese is very prevalent, but far less severe than among Americans and Europeans. I have never seen pannus, keratitis, or any other evidence of corneal involvement among them, although the granulations in consistency and size, as well as the palpebral thickening, vascularity, and scars, are readily comparable to the lesions in white persons.

A very common eye affection of Chinese is the retention in the meibomian glands of a light yellow, waxy material with or without a coexisting palpebral thickening.

The examination of aliens was limited to those of the second-class and steerage passengers listed on the aliens' manifest by the steamship companies, and

bound to the States. All persons so manifested were examined as aliens, although some of them unquestionably were citizens of the United States and therefore not legally subject to such. It does not clearly appear to be the function of this office to decide upon the validity of a Chinaman's claim to United States citizenship, and it has been customary to accept the classification of the steamship companies. After the examination the alien manifests are certified as follows, the Service seal being affixed:

The rejected aliens are entered on the descriptive list (Form "A" inclosed), copies of which are also forwarded to the Surgeon-General and to the Commissioner-General of Immigration through the Surgeon-General. The representative of the steamship company is duly informed, and he has instructions to refuse passage to such diseased aliens.

This foreign examination is not only a valuable public-health measure, but to the afflicted a benevolent accommodation, and one richly deserving permanent support. But the examination unintentionally embarrasses native-born and naturalized Chinese citizens of the United States, for ordinarily they are classified as aliens by the steamship agents, who are extremely anxious to avoid the possibility of fines imposed by the immigration laws. Such citizens may be rejected as aliens with loathsome or dangerous contagious diseases, and therefore find it impossible to obtain passage. Should the steamship agents adjudge the "citizen's papers" valid, the proper authorities of the United States might disagree and fine the company for bringing diseased aliens. Such Chinese citizens do not appear to be cognizant of their right to invoke the aid of the consul-general, and heretofore the steamship agents have not seen the value of such.

Alien examination tabulated.

Aliens examined	4, 168
Aliens afflicted with trachoma	526
Aliens afflicted with syphilis	2
Aliens afflicted with gonorrhea	3
Aliens afflicted with chancroids	1
Aliens afflicted with scabies	15
Aliens afflicted with other loathsome or dangerous contagious diseases	0

Respectfully,

The SURGEON-GENERAL.

M. J. WHITE,

Passed Assistant Surgeon.

[Inclosure.]

Report of inspection of aliens at port of Shanghai, China, during the year ended June 30, 1904.

Month.	Number inspected.	Number certified.	Number deported.	Cause of deportation.
1903.				
July	None.	None.	None.	
August	None.	None.	None.	
September	None.	None.	None.	
October	3	3	0	
November	6	4	1	Trachoma.
December	15	14	1	Do.
1904.				
January	8	8	0	
February	25	24	1	Syphilis.
March	11	11	0	
April	15	11	4	Trachoma.
May	4	4	0	
June	3	3	0	
Total	89	82	7	

The above report covers the transactions of the division under my charge for the fiscal year.

Respectfully submitted.

W. J. PETTUS,

Assistant Surgeon-General.

The SURGEON-GENERAL.

DIVISION OF DOMESTIC QUARANTINE.

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REPORT OF THE DIVISION OF DOMESTIC QUARANTINE.

By A. H. GLENNAN,

Assistant Surgeon-General Public Health and Marine-Hospital Service, in charge.

SIR: I have the honor to submit the following report of the operations of the division of domestic quarantine of the Public Health and Marine-Hospital Service for the fiscal year ended June 30, 1904.

PLAGUE IN SAN FRANCISCO.

The satisfactory cooperation of the State and municipal authorities of California with the Public Health and Marine-Hospital Service in the eradication of plague infection in the Chinese district of San Francisco has been steadily carried on under the immediate direction of officers of this Service. As anticipated, and originally planned, the sanitary supervision and regulation of this Chinese district was expected to occupy a considerable length of time. While there were 24 cases reported with one recovery during the fiscal year, the results attained, together with the present long interim without further appearance have justified the methods adopted for the extermination of this infection.

In a few instances, rumors of the existence of plague in places outside of San Francisco were immediately investigated by officers of the Service and the nonexistence of the infection definitely determined, or suitable suppressive measures instituted where suspicion existed.

Under date of August 11, 1903, Passed Asst. Surg. Rupert Blue transmitted a signed statement setting forth the unanimity of opinion as to the methods being prosecuted in the sanitary regeneration of the Chinese quarter, as follows:

[Statement.]

SAN FRANCISCO, CAL., August 18, 1903.

It has been the experience of the health authorities now engaged in the sanitary improvement of the city of San Francisco that in that particular area bounded by California, Stockton, and Montgomery streets and the bay the most objectionable features coming under our observation have been the filthy accumulation of back areas and the building into said areas from the original structures to the extent that all sunlight and fresh air are prevented from permeating these spaces, and in accordance with this evidence it has been agreed and found necessary by all that all these mentioned places shall be thoroughly cleansed and structures removed; that in any instance where it is desired to restore these places the following shall be the mode of procedure, namely, at least 1 foot of surface soil shall be removed, a concrete floor placed thereon, upon which may be built a one-story brick structure, with glass roof, properly ventilated, for the purpose of storeroom, kitchens, or toilet, and that no other

structure be permitted in said areas except a balcony 5 feet square for the convenience of the different stories for toilet purposes, to be built in accordance with the building and plumbing regulations of this city and county.

It is further agreed that this ruling shall apply to all parts of the city and county of San Francisco when, in the opinion of the health authorities, the sanitary conditions require it.

MARTIN REGENSBURGER, M. D.,
President State Board of Health.

N. K. FOSTER, M. D.,
Secretary State Board of Health.

RUPERT BLUE,
Passed Assistant Surgeon, P. H. and M. H. S.

A. P. O'BRIEN, M. D.,
Health Officer, City and County of San Francisco.

WM. C. HASSLER, M. D.,
Chief Sanitary Inspector Health Department, San Francisco.

RESOLUTIONS RELATIVE TO COOPERATIVE WORK IN THE SANITATION OF CHINATOWN.

SAN FRANCISCO, CAL., February 8, 1904.

SIR: I have the honor to transmit herewith a copy of the resolutions adopted at a conference of the Federal, State, and city health authorities with members of the finance committee of the board of supervisors and representatives of the mercantile organizations, held in the offices of the merchants' joint committee, February 6, 1904. This meeting was called for the purpose of discussing the situation in Chinatown, and also to reach an understanding as to the sanitary measures to be adopted in future. The agreement under which the work had been prosecuted for the past year having expired, and a new city board of health having been recently appointed, it was deemed advisable to renew the plan of cooperation at this time. The inclosed resolutions were unanimously adopted.

Respectfully,

RUPERT BLUE,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

RESOLUTIONS.

Resolved, That it is the sense of this meeting that the sanitary measures adopted by the city, State, and Federal health authorities in February, 1903, for the eradication of contagious diseases in Chinatown be continued for so long a time as may be considered necessary; that the city board of health be requested to recommend to the board of supervisors additional measures for the wholesale destruction of rats.

Resolved, That all cellars, basements, and underground places in the district between California and Pacific, Stockton and Kearny, be condemned as places of abode and the same be destroyed; that in case of reconstruction the owners be required to remove surface soil and to concrete the area thus exposed solidly from wall to wall.

Resolved, That the work be done under the direction and supervision of the Public Health and Marine-Hospital Service, and that a meeting of the representatives of the Public Health and Marine-Hospital Service, the city board of health, and the State board of health be held once every two weeks for consultation.

MARTIN REGENSBURGER,
President State Board of Health.

RUPERT BLUE,
Passed Assistant Surgeon U. S. P. H. and M. H. S.

JAMES W. WARD, M. D.,
President San Francisco Board of Health.

N. K. FOSTER,
Secretary State Board of Health.

A. A. D'ANCONA,
Member Hospital and Finance Committees, Board of Supervisors.

WM. C. HASSLER, M. D.,
Chief Inspecting Physician.

SAN FRANCISCO, February 6, 1904.

The practical experience obtained in the use of vermin destroyers over considerable areas of a city, such as arsenic and phosphorus paste and Danysz virus, for the destruction of rats and vermin, is worthy of notice. The expense of the Danysz virus was lessened and its virulence raised by cultivation in bouillon with good result.

The report of Passed Assistant Surgeon Blue, giving the details of the work during the fiscal year, follows, and, as a matter of interest on account of the rarity of systematic necropsies in deaths from plague, attention is called to some valuable reports of such necropsies, which will be found included under the reports of fatal cases with necropsies, miscellaneous division of this annual report.

Commendation is due to Asst. Surg. Donald H. Currie for his work in the laboratory in San Francisco, in connection with the verification of the provisional diagnoses of plague made from the necropsic findings, and to him and Asst. Surg. Bolivar J. Lloyd, for intelligent aid rendered the medical officer in command in the sanitary supervision of the Chinese quarter.

REPORT OF PASSED ASST. SURG. RUPERT BLUE.

UNITED STATES PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE LABORATORY, *San Francisco, Cal., July 28, 1904.*

SIR: I have the honor to submit the following report of the transactions of the Service at this station for the year ended June 30, 1904: During the year there was officially recorded by the city statistician a total of 371 Chinese deaths from all causes. Deducting from this number 17 deaths classed as violent and basing the calculation on an average population of 13,000, gives an annual mortality rate of 27.23 per thousand. The mortality last year was considerably higher, amounting to 31.70 per thousand. The decrease in the death rate is undoubtedly due to the improved sanitary conditions and to the altered mode of living of the Chinese, which has been accomplished through conferences with the headmen of the various tongs and associations. Daily domiciliary inspections have also had a marked influence in developing in the oriental mind the power of grasping the significance of the rules of cleanliness as applied to everyday life. Following is a transcript of all registered deaths since 1897:

Year.	Deaths.	Year.	Deaths.
1897-98	454	1900-1901	418
1898-99	548	1901-1902	430
1899-1900	562	1902-1903	464

MORTUARY STATISTICS.

Deaths due to infectious and contagious diseases for the year under review: Pulmonary tuberculosis, 132; other forms of tubercular disease, 11; diphtheria, 1; typhoid fever, 2; beriberi, 11; bubonic plague, 23.

NECROPSY REPORT (UNITED STATES LABORATORY).

Number of dead examined, 388; number of bodies necropsied, 138; number passed not requiring necropsy, 250; number showing pest infection, 22 (Chinese, 13; whites, 7; Japanese, 2). See list of cases.

PLAGUE—TYPES OF THE DISEASE.

Plague incidence this year followed the same course as that observed in 1901. In San Francisco most of the cases occur in the summer and fall (the winter months being almost entirely free from the disease), but in 1904 a few cases appeared in January and February and the infection continued to manifest

itself till February 19, when it disappeared and did not again return during the year.

With regard to types, it will be remembered that there were three cases of the purely pneumonic type of the disease, all fatal, in a family of Sicilians living under unhygienic conditions in close proximity to the Chinese quarter. Infected rats were found in this neighborhood before the outbreak, but it was thought that everything had been done to destroy the infection and the appearance of these cases was unexpected. A thorough inspection and disinfection of this section of the city was immediately ordered and carried out, with the result that no further cases have appeared. Of the 24 cases 1 was purely bubonic, 16 bubo-septicaemic, 2 septicaemic, 2 tonsillo-bubo-septicaemic, and 3 primarily pneumonic.

LABORATORY REPORT OF RATS EXAMINED.

Number caught alive and delivered at laboratory	1,952
Number found dead and delivered at laboratory	1,061
Number showing pest infection	22

The epidemic among rats was very light, there being but 22 infected cadavers found out of the 3,000 or more examined in the laboratory for *B. pestis*. Quite a large mortality was due to the phosphorus poison prepared in the laboratory and placed in sewers and protected runways above-ground from time to time. Good results also were obtained from the Pasteur rat virus (Danyasz) procured through the San Francisco agents of the Pasteur Vaccine Company and spread liberally in the homes of the Chinese and Japanese. This virus, being harmless to man and domestic animals, would appear to be an ideal poison for home use, but may be objected to on the ground of cost and from the fact that it undergoes a rapid deterioration when exposed. One of these objections can be overcome and a saving effected in the cost of the virus by incubating in bouillon for twenty-four to forty-eight hours. By this process the numbers of the organism (*B. typhi murium*) are increased and possibly their virulence as well. In proof of its efficacy it should be stated that numbers of rats trapped alive in Chinatown and quarantined at the laboratory have died from the effects of *B. typhi murium*. In a cage of 24 rats so trapped 14 died of this disease in a short time.

SANITARY MEASURES.

The sanitary measures taken with a view to the suppression of disease have been carried out thoroughly and embrace the following: Special disinfection of houses and premises wherein the disease occurred, general disinfection of the infected district, isolation of those sick with the disease, surveillance of and prophylactic inoculation with Yersin serum of contacts, the destruction of rats by means of Danyasz virus and phosphorus paste in the infected area, the general sanitary improvement of the dwellings and stores with regard to the correction of faults of construction and plumbing. For the purpose of excluding rats from dwellings and shops the cementing of ground floors was early recognized as a necessity, because as soon as the rats of the infected district were killed or driven away others would eventually crowd in from adjoining districts and reinfest the homes of the Chinese. This measure, while expensive and necessarily slow of accomplishment, is recognized as the most important feature of the year's work and worthy of the highest commendation as a means of protection against infection. Up to this time more than half the basements and cellars situated in the worst parts of the Chinese quarter have been cemented, and the walls in many instances repaired with brick at the expense of the owner or lessor. Shocking conditions in many instances were uncovered by removal of the floors. Broken soil pipes and often cesspools filled with the excretions of years were found under the rotting floors of cellar dormitories in which the cubic air space ordinance of the board of health had long been violated. Owing to the ill usage of the occupants and defective plumbing the woodwork in many of these homes had become saturated with germ-laden filth to such an extent that purification could only be attained by summary removal and destruction by burning. Firing the soil, in view of the theory of the saprophytic existence of the bacillus in soil, has been practiced in the places left vacant by the removal of small buildings in back areas.

By referring to the list it will be seen that 9 out of the 13 Chinatown cases occurred on Jackson street and Fish alley, near their junction. These deaths coming so near together pointed to a central focus of infection situated some-

where on Jackson street between Kearny and Dupont. It was determined to tear out and burn all the woodwork of the basements and cellars in this neighborhood and to require the owners to cement the ground before reoccupation would be allowed. The old Chinese theater on the corner of Fish alley and Jackson street was one of the first places to be reached, and under its floors were found the conditions described above. It is a significant fact that no cases have occurred in San Francisco since the completion of this work. Following is a summary of the sanitary improvements of this nature:

Basements and cellars torn out	155
Basements and cellars cemented.....	139
Rear areas torn out.....	173
Rear areas rebuilt under sanitary regulations	113
Buildings totally destroyed.....	7
Buildings refitted with new plumbing.....	71
New toilets erected.....	72

In addition the old rookery at 620 Jackson street, formerly known as the "Grand Hotel," which accommodated 400 to 500 Chinese lodgers, has been gutted and entirely rebuilt by the owners. No Chinese tenants will be allowed to occupy this new building. None of the alleged subterranean passages from house to house or from house to sewer have been discovered. This fact is interesting when taken in connection with the statement so often made that the Chinese, in 1900, during the quarantine of Chinatown, passed in and out of the quarantined district at will through some underground route.

OBSERVATIONS.

Our observations with regard to the transmission of plague from person to person bear out the statements of other observers engaged in similar work, namely, that spread of the infection through contact with uncomplicated bubonic cases is of very rare occurrence. With the primarily pneumonic cases, however, results have been very different. As illustrative of the infectivity of this type of the disease, the following cases may be reviewed: On February 8 a young woman of Sicilian parentage died of what was proved to be pneumonic plague at necropsy. In exactly eleven days after (19th) both the father and mother had succumbed to the same malady. It would appear from these cases, however, that residence under the same roof is the real danger, and not mere contact, such as would follow from the short visits of physicians and friends. Many people visited the girl while she was ill, and more than 15 young girls, members of the same confraternity, kissed the corpse on the day of the funeral, yet not one of them contracted the disease.

THE CASE OF PLAGUE IN CONTRA COSTA COUNTY.

The source of infection of the case of plague which occurred in Contra Costa County, near Concord, in the month of February, has not as yet been definitely traced. It might, however, have been conveyed through the agency of food or wearing apparel brought in from some other place. This agricultural section of the State is devoted largely to the cultivation of fruits and vegetables, and is so dry and parched during six or seven months of the year that, barring the existence of rodent life in large numbers, no fears should be entertained of a permanent lodgment of the disease therein. No cases have been reported from the other sections of the State.

RELATIONS WITH STATE AND CITY AUTHORITIES.

All the sanitary measures of last year have been prosecuted uninterruptedly and with unflagging zeal upon the part of the medical officers (Federal, State, and city) in charge of the work. The new board of health appointed by Mayor Schmitz in January elected Dr. James W. Ward, president; Dr. D. F. Ragan, health officer, and retained Dr. Wm. C. Hassler, chief sanitary inspector of the old board, in office. These gentlemen have rendered every assistance in their power, and have shown at all times a deep professional interest in the execution of the sanitary plans and recommendation of the Service representative. Out of the monthly conferences of the Federal, State, and city health authorities has grown a permanent organization known as the "Public Health Commission of California," which will pass upon, at its monthly meetings, all questions relating to

quarantinable diseases in the State, with especial reference to the plague situation in San Francisco. The commission has organized as follows: Officers—the Service representative, president; chairman State board of health, first vice-president; chairman city board of health, second vice-president; the secretary of the city board of health will be secretary of the commission. Members—officers of the Public Health and Marine-Hospital Service, officers and members State and city boards of health, county health officers, surgeons of the maritime and inland transportation companies, ex-presidents State and city boards of health, members of the finance committee of the board of supervisors, chairman and secretary of the joint committee of the merchants' associations, and the governor and mayor, ex officio.

The attitude of the State board of health has been all that could be desired. Drs. Martin Regensburger and N. K. Foster, president and secretary, respectively, of the board, have attended regularly the monthly conferences held in this laboratory, and their assistance has at all times been freely given.

Respectfully,

RUPERT BLUE,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

[Inclosure.]

List of plague cases for the year ended June 30, 1904.

96. Chin Gule; aged 62; July 14, 1903; 743 Jackson; male.
97. Pietro Spadafora; aged 35; July 19, 1903; 19 Jasper place; male.
98. Mrs. Pietra Brancato; aged 62; July 20, 1903; 19 Jasper place; female.
99. Yee Ku Jin; aged 44; July 29, 1903; 722 Jackson; male.
100. Charles Bock; aged 33; August 10, 1903; German Hospital; male.
101. Wo Coey Chung; aged 44; August 21, 1903; 735 Commercial; male.
102. E. T. Slater; aged 31; September 13, 1903; Railroad Hospital; male.
103. K. Imal; aged 26; October 7, 1903; 418a Post; male.
104. Jung Mon Tzang Shee; aged 23; October 21, 1903; 30 Fish alley; female.
105. Chin Lai; aged 54; October 22, 1903; 30 Fish alley; male.
106. H. Inouye; aged 15; October 24, 1903; 334 Bush; male.
107. Lai Shew; aged 57; October 29, 1903; 627 Jackson; male.
108. Slick Chat; aged 7; November 4, 1903; 742 Washington; female.
109. Jew Soo; aged 7; November 7, 1903; 844 Washington; female.
110. Chin Mon Tzer Shee; aged 54; November 11, 1903; 1016 Stockton; female.
111. Ho Mon Chin Shee; aged 26; January 10, 1904; 628 Jackson; female.
112. Lee Woon Wing; aged 62; January 11, 1904; 624½ Jackson; male.
113. Lee Nglin Leau; aged 61; January 13, 1904; 18 Fish alley; male.
114. Katie Cuka; aged 18; recovered; 558a Natoma; female.
115. Irene Rossi; aged 18; February 8, 1904; 6 Verraness; female.
116. Giuseppe Rossi; aged 54; February 12, 1904; 6 Verraness; male.
117. Fung Bu; aged 42; February 14, 1904; 714½ Jackson; male.
118. Luisa Rossi; aged 45; February 19, 1904; died City and County Hospital; female.
119. Mrs. Frank Soto; aged 39; February 29, 1904; Concord, Cal.; female.

YELLOW FEVER.

The prevalence of yellow fever in some of the ports of Mexico, and more southern countries, was noted in the last annual report. Subsequently the disease spread rapidly in the territory adjacent to our southern border, finally assuming epidemic proportions. The land quarantine along the Texas-Mexican border was strengthened as far and as promptly as possible in aid and cooperation with the State authorities of Texas.

At Tampico, Mexico, for the week ended July 4, 1903, 28 new cases of yellow fever were reported, with 40 cases for the previous week and 31 deaths, while at Vera Cruz 110 cases and 36 deaths were

reported during the month of June, 1903, with a few cases at Orizaba, 130 kilometers by rail from Vera Cruz and 1,200 meters above the sea level. This condition of affairs was recognized as a menace to the Gulf coast of the United States and by rail to the Texas border as well.

Upon July 3, 1903, the steamer *Mount Vernon*, from Port Limon, arrived at the Mobile quarantine station with the medical inspector ill with yellow fever. The vessel was remanded to the National Gulf quarantine station, where the patient died the morning after arrival; no further spread of the disease occurred.

INSTRUCTIONS TO OFFICERS RELATIVE TO YELLOW FEVER.

Yellow fever being actually present at Tampico, Mexico, and Limon, Costa Rica, the following telegrams were sent:

— JULY 7, 1903.

LIPPINCOTT, *American Consulate, Tampico, Mexico:*

Take temperature passengers and crews on vessels bound for United States ports and detain those above normal. Authorized to purchase one dozen clinical thermometers.

WYMAN, *Surgeon-General.*

— JULY 8, 1903.

GRUEVER, *American Consulate, Port Limon, Costa Rica:*

During prevalence yellow fever take temperature passengers and crews vessels bound for United States. Detain all with temperature above normal. Authorized to purchase dozen thermometers.

WALTER WYMAN, *Surgeon-General.*

VESSELS FROM MEXICAN PORTS TO BE FUMIGATED AND HELD AT PENSACOLA AND CARRABELLE, FLA.

[Telegrams.]

KEY WEST, FLA., July 7, 1903.

WYMAN, *Washington:*

In view of marked increase yellow fever Tampico and Merida, 100 cases, with 61 deaths, have instructed White, at Pensacola, and Stewart, at Carrabelle, to fumigate all vessels from Mexican ports and hold five days from completion of fumigation. Request your approval of these instructions.

PORTER.

WASHINGTON, July 8, 1903.

Dr. J. Y. PORTER, *Tampa, Fla.:*

* * * Your instructions to White, at Pensacola, and Stewart, at Carrabelle, mentioned in telegram July 7, approved. * * *

WYMAN.

— [Letters.]

WASHINGTON, July 15, 1903.

DEAR SIR: Referring to the subject of the fruit steamer *Mount Vernon*, recently from Port Limon to your port, on which the temporary medical inspector sickened and died of yellow fever, I would be pleased to know whether he was considered immune to that disease.

Paragraph 55 of the United States Quarantine Laws and Regulations, 1903, page 23, requires that the personnel of fruit vessels bound for our Southern

ports should be immune, and this unfortunate fatality demonstrates the wisdom of this requirement.

Respectfully,

W. WYMAN,
Surgeon-General.

Dr. HENRY GOLDTHWAITE,
*Health and Executive Officer,
Quarantine Board of Mobile Bay, Mobile, Ala.*

MOBILE, ALA., July 17, 1903.

SIR: Replying to yours of the 15th instant, regarding death of inspector on fruit steamer *Mount Vernon*, and calling our attention to paragraph 55, United States Quarantine Laws and Regulations, regarding personnel of fruit vessels, I beg to say that where it is possible persons known to be immune are secured for these positions and every effort is made to secure such persons.

Doctor Parker, of the *Mount Vernon*, had lived here for some time, and while not an immune we considered him an acclimated individual. In this connection I would say that the crews of the fruit steamers are constantly changing, and without placing an absolute embargo against this class of business it is almost an impossibility to adhere to the strict letter of the law.

Very truly, yours,

HENRY GOLDTHWAITE,
Health and Executive Officer.

The SURGEON-GENERAL.

SITUATION UPON THE TEXAS-MEXICAN BORDER.

On July 2, 1903, telegraphic inquiry was addressed to the acting assistant surgeon in charge at Laredo, Tex., as to the advisability of investigating rumored yellow fever at Monterey, Mexico. His reply upon same date stated that his personal investigation of that point was not necessary, Monterey having quarantined Tampico, Mexico. The Bureau, however, carefully observed the condition of affairs which threatened the Texas border, and was prepared to send additional officers to the points of danger and also to reinforce the small camps for detention of suspects.

DANGER OF TRANSMISSION OF YELLOW FEVER TO MONTEREY FROM TAMPICO.

Acting Assistant Surgeon Hamilton, at Laredo, Tex., reported July 10 as follows:

Referring to danger of yellow fever reaching Monterey from Tampico, I quote telegram received of Consul-General Hanna, at Monterey, dated July 10:

"Have made careful investigation. Am thoroughly convinced that everything is clean as far south as Victoria. No cases of yellow fever known in Victoria nor Monterey. Two quarantines between here and Tampico."

I have written the consul at Victoria to give me early information should cases occur there.

The death of a railroad official at Cardenas of yellow fever acquired in Tampico is reported by the press. Cardenas is 150 miles from Tampico on railroad between Tampico and San Luis Potosi. There is no quarantine on this line of travel. San Luis Potosi is claimed to be noninfectible. It has an altitude of 6,000 feet. Monterey may be reached via San Luis Potosi from Tampico in thirty-nine hours without quarantine inspection, which includes a delay at San Luis Potosi of twelve hours on account of trains not making connection. Therefore persons infected at Tampico may reach Monterey notwithstanding the double quarantine on the direct route. Acting Asst. Surg. John Frick, of Tampico, who passed through here a short time ago, informed me that the quarantine inspection consisted in taking the temperature of passengers and a change of train crews. Persons having normal temperature are allowed to pass. Time consumed from Tampico to Monterey is thirteen and one-half hours.

Two families of railroad employees between Tampico and Monterey have passed through here. The employees believed that yellow fever would soon

break out in Monterey and they were afraid to remain there. They had been running between Monterey and Tampico. They informed me that crews of freight trains ran through to Tampico, only the passenger crews being changed at quarantine station.

PRECAUTIONS WITH REGARD TO VESSELS ARRIVING VIA NORTHERN PORTS.

Steps were also taken to protect ports south of the southern boundary of Maryland from vessels via northern ports arriving from places infected with yellow fever, as will be shown in the following correspondence:

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, July 9, 1903.

SIR: Referring to that portion of the Quarantine Laws and Regulations of the United States, revised edition, 1903, entitled "Special Regulations on account of Yellow Fever," page 27, and particularly to paragraph 107 of this section, it is desired that if possible an arrangement in the interest of commerce be entered into with the quarantine officer of the port of New York, whereby "via" vessels arriving at his port from territory infected or suspected of infection with yellow fever and expecting to proceed to southern ports of the United States may be disinfected and a certificate issued to that effect for the use and guidance of the quarantine officers south of the Maryland line. Such an arrangement will obviate delay to this class of vessels at southern ports and carry out the provisions of the Quarantine Laws and Regulations of the United States.

You are therefore directed to confer with Dr. A. H. Doty, health officer for the port of New York, Quarantine, Staten Island, N. Y., and endeavor to effect such an arrangement and agree upon a form of certificate setting forth the treatment given to such vessels at his port for exhibit to quarantine officers south of the Maryland line.

Respectfully,

WALTER WYMAN, *Surgeon-General*.

Surg. P. H. BAILHACHE,
*Public Health and Marine-Hospital Service,
Stapleton, Staten Island, N. Y.*

A similar letter of direction was addressed to the medical officer in command, Public Health and Marine-Hospital Service, Baltimore, Md., to confer with the commissioner of health at that port upon the same subject.

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, July 9, 1903.

SIR: Referring to Bureau letter of even date, directing you to confer with the health officer for the port of New York in regard to the arrival of "via" vessels from yellow-fever latitudes, you are also directed at the same time to make inquiry as to whether any examination of rats is made upon vessels arriving from ports infected or suspected of being infected with plague. Also to ascertain as to the advisability for the occasional sulphurization of this class of vessels to destroy rats and vermin, after the discharge of cargo.

Respectfully,

W. WYMAN, *Surgeon-General*.

Surg. P. H. BAILHACHE,
*Public Health and Marine-Hospital Service,
Stapleton, Staten Island, N. Y.*

UNITED STATES PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Port of New York (Stapleton), N. Y., July 14, 1903.

SIR: I have the honor to acknowledge receipt of Bureau letter of July 9, 1903, directing me to confer with Dr. A. H. Doty, health officer of the port of New

York, in regard to the arrival of "via" vessels from yellow-fever latitudes, and endeavor to effect an arrangement and agree upon a form of certificate setting forth the treatment given to "via" vessels at the port of New York, for exhibit to quarantine officers south of the Maryland line. In the absence of Doctor Doty, who is now in Europe, I called on Doctor L'Honniedieu and explained the matter to him. He informed me that they were furnishing a certificate to "via" vessels, and at my suggestion it was amended to include the Treasury regulations. Copy of the certificate agreed upon is herewith inclosed.

In regard to the matter of examination of rats in vessels from ports infected or suspected to be infected with plague, such examinations are made, and these vessels are fumigated with sulphur for the purpose of destroying rats and other vermin.

Respectfully,

PRESTON H. BAILHACHE,
Surgeon in Command.

The SURGEON-GENERAL.

[Inclosure.]

To whom it may concern:

This is to certify that the S. S. ——— has this day been disinfected in accordance with the rules and regulations of this department and the Treasury Department. The bedding, clothing, and effects of the crew have been subjected to steam, and the cabin, fore-castle, and hold of vessel disinfected with sulphur and bichloride of mercury. The crew took no part in the above disinfection.

Health Officer, Port of New York.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Baltimore, Md., July 15, 1903.

SIR: As directed by Bureau letter of July 9, 1903, I have conferred with Doctor Bosley, the commissioner of health of Baltimore, Md., under whose jurisdiction comes the maritime quarantine of this port relative to the disinfection of vessels from yellow-fever ports for southern ports via Baltimore—the so-called "via vessels."

We find that such vessels very rarely come to this port. When all Cuban ports were considered as infected or suspicious the case was different, but at present, for the past two years, practically no vessels are entered here from ports where yellow fever now prevails, except a few sailing vessels from Santos and Rio Janeiro, and these have not cleared for ports south.

Respectfully,

H. R. CARTER, *Surgeon.*

The SURGEON-GENERAL.

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, July 24, 1903.

SIR: In reply to your telegram of July 16, 1903, "White, Pensacola quarantine, asks if vessels from Tampico via New York having health officers of New York certificate of disinfection should be refumigated at Pensacola, my opinion is no necessity, but would request Bureau's opinion and decision," you are informed steps had already been taken for a conference with the health officer of the port of New York with a view to the issuance of a certificate to vessels expecting to proceed to Southern ports, for exhibit to quarantine officers south of the Maryland line, showing that they had received the treatment required by the quarantine laws and regulations for "via" vessels. A copy of the letter of the medical officer in command of this Service at New York is herewith inclosed, together with form of the certificate which will be issued.

If this certificate is presented, it is the opinion of the Bureau that no further treatment will be necessary, provided the vessel arrives with no sickness on board.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

Sanitary Inspector J. Y. PORTER,
Public Health and Marine-Hospital Service, Key West, Fla.

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, August 13, 1903.

SIR: The attention of the shipping interests concerned is invited to the fact that vessels arriving at our Northern ports from ports or places suspected or infected with yellow fever and proceeding south of the southern boundary of Maryland are subject, under the United States Quarantine Laws and Regulations, to disinfection and detention at these Southern ports, coming under the class of "via" vessels.

The fact that they are admitted and remain in Northern ports for a few days to several weeks does not modify this restriction. In order to avoid delay to commerce, it is suggested that such vessels—say, at the port of New York—receive fumigation and take the certificate of the quarantine officer of that port, setting forth the fact and manner of procedure, for exhibit to the quarantine officer south of the Maryland line. The time of detention after fumigation may then be immediately reckoned and the vessel be subject upon arrival to inspection and verification of the fumigation only without further delay except to complete the five-day period of observation, if not already completed; provided no suspicious illness occurs after the fumigation.

In like manner "via" vessels proceeding to the port of Philadelphia may be fumigated at the United States quarantine station, Reedy Island, Delaware, and a certificate taken to that effect.

Very truly, yours,

WALTER WYMAN, *Surgeon-General.*

SECRETARY MARITIME EXCHANGE,
New York, N. Y.

A similar letter was addressed to the Secretary Maritime Exchange, Philadelphia, Pa.

PROTECTION OF GULF PORTS AGAINST YELLOW FEVER FROM MEXICO.

On account of the epidemic proportions of yellow fever in certain Mexican ports during the month of July and the illness of the immune acting assistant surgeon detailed for duty at Tampico, Mexico, it was found necessary to take extra precautions for the protection of the Gulf coast.

An immune medical officer of the Service was directed to proceed to Tampico, Mexico, via Pensacola, Fla., to make special reports upon the conditions along that line of water travel, while at the same time reports received from the sanitary inspector of the Service in Florida coincided with the necessity for these additional precautions.

- [Telegrams.]

WASHINGTON, July 16, 1903.

WALTER D. HINES,

*First Vice-President Louisville and Nashville Railroad,
Louisville, Ky.:*

Illness of accredited Service inspector and marked increase of yellow fever has caused temporary disarrangement of plan at Tampico. An arrangement might possibly be made whereby your vessels could be immediately released after removal of crew and disinfection of vessel at Pensacola quarantine.

WYMAN, *Surgeon-General.*

WASHINGTON, July 22, 1903.

Doctor GOLDTHWAITE,

Health and Executive Officer, Mobile, Ala.:

As previously wired you, Acting Assistant Surgeon Frick, who was detailed by President in office consul, Tampico, obliged to withdraw on account of sickness. Lippincott, a locum tenens, not detailed by President, and while he is disinfecting in accordance with instructions, still Bureau does not regard Tampico equipped with an accredited medical officer, as contemplated by regulations. Therefore,

until commissioned officer reaches Tampico, Bureau holds regulations require disinfection and five-day detention thereafter of vessels from Tampico. Please wire if you are doing this. Above instructions have been sent to other ports. Richardson ordered from New Orleans to Tampico.

WYMAN.

This telegram was repeated to State health officers of Louisiana and Texas, and to Passed Assistant Surgeon Grubbs, at Gulf quarantine, Mississippi.

MOBILE, ALA., July 23, 1903.

WYMAN, *Washington*:

We are disinfecting all vessels from Tampico, with five days' detention thereafter.

GOLDTHWAITE, *Health Officer*.

AUSTIN, TEX., July 23, 1903.

WYMAN, *Washington*:

Vessels from Tampico are disinfected and held five days. Texas quarantine against Mexican ports very rigid.

TABOR, *State Health Officer*.

NEW ORLEANS, LA., July 23, 1903.

WYMAN, *Washington*:

We have always disinfected and detained five days vessels from Tampico and will continue to do so. * * *

EDMOND SOUCHON,
President Louisiana State Board of Health.

INSPECTION OF GULF COAST.

The patrol of the Mississippi Gulf coast against yellow fever mentioned in the annual report for the fiscal year 1903, was continued, and in addition thereto the medical officer of the Service stationed at New Orleans was directed to make periodical visits along this coast line. No suspicion of yellow fever was reported during the season.

[Letter.]

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, July 23, 1903.

SIR: Your attention is called to a copy of the instructions sent to officers in Mexican ports, bearing date May 18, 1903, mailed to you yesterday.

First Vice-President Hines, of the Louisville and Nashville Railroad Company, was yesterday in consultation with myself concerning the quarantine restrictions on the vessels of his line. These are three in number and ply regularly in the coal traffic between Tampico and Pensacola, taking coal to Tampico and returning empty. They carry and will carry no passengers. They are the *Belmont* and the *Pensacola*, owned by the Louisville and Nashville, and the *Dorisbrook*, chartered by them. Their crews vary from 30 to 40 each. In accordance with suggestions from the Bureau, it is understood each vessel has been provided with a sufficient number of Dutch ovens, alcohol, sulphur, and pans, or containers, for thoroughly disinfecting the ship at Tampico.

It would seem that if the vessels at Tampico, while thus empty and at a safe distance from the shore, are thoroughly disinfected for at least two hours before weighing anchor and weighing anchor immediately after the disinfection, all the crew having been inspected before departure, might with safety be admitted at the port of Pensacola, after a sufficient detention to make five full days from Tampico, provided no sickness occurring on board.

To be on the safe side, however, the arrangement should include the taking of the temperatures of the crew at the foreign port and the detention of any

whose temperature is above normal, unless the cause thereof is evidently due to some other trouble than yellow fever, care being taken to avoid deceit on the part of the crew by holding water or ice in their mouths before the insertion of the thermometer.

On arrival at Pensacola the arrangement includes again taking the temperatures with thermometers and, for additional safety, another fumigation, which, it is understood, will not be particularly objected to. After the fumigation there will be required a detention to complete five full days from the completion of the fumigation at Tampico, and, moreover, a further detention for a day or more, if in the opinion of the quarantine officer, for any reason, it seems desirable to impose it, it being understood that further detention after fumigation at Pensacola may be imposed up to five days, but that it is not required as a routine procedure, and, in point of fact, it is not improbable that it would be equally safe to allow the vessel to proceed after one or two days' detention.

A certificate must accompany each vessel from the officer at Tampico, giving the exact day and hour on which the fumigation is considered completed. If it is contemplated to allow the fumigation to be continued at sea, this may be done, but it should be considered as supplementary time, the orders previously given standing good, that the medical officer at Tampico shall not leave the vessel or give it pratique until the two hours' fumigation have been completed.

While you are making the formal inspection of Santa Rosa Quarantine you are directed to investigate the feasibility, and make a full report upon the plan of treatment of these particular vessels arriving from Tampico.

You are directed also to report by wire as to the advisability of placing immune medical inspectors upon these vessels.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

Asst. Surg. T. F. RICHARDSON,

Public Health and Marine-Hospital Service, Pensacola, Fla.

Doctor Richardson was directed to confer with Sanitary Inspector Porter at Pensacola, and show him Bureau letter of instructions relative to the safety of communication between that port and Tampico, Mexico.

[Letters.]

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, July 31, 1903.

SIR: Referring to telegram of this date, and to your report of the 27th instant in regard to vessels from Tampico, Mexico, you are directed to make a careful investigation of the situation at Tampico, especially noting the place where vessels bound for the United States ports are fumigated before bill of health is granted, as per agreement of May 18, with the regular steamship lines, a copy of which was forwarded to you at Pensacola. It is the desire of the Bureau that this disinfection should be made at a point where there will be no danger of mosquitoes coming aboard the vessel while being disinfected, or afterwards before she sails. The question of the possibility of the reinfection of the vessel after those mosquitoes already on board have been killed, is a most important one, and if this agreement is to hold good every precaution must be adopted to prevent such an occurrence. You are requested to transmit with your report a sketch of the bay at Tampico, including the Panuco River, showing the point where the disinfection has been done in the past; also where it should be done in the future, if you consider the present place unsafe; also any facts that may be of interest in regard to the matter.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

Asst. Surg. T. F. RICHARDSON,

Public Health and Marine-Hospital Service, Pensacola, Fla.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Pensacola, Fla., July 27, 1903.

SIR: I have the honor to acknowledge the receipt of Bureau letter of 23d instant concerning the proposed treatment of vessels of the Gulf Transit Com-

pany (Louisville and Nashville Railroad Company) at Tampico and at this port, so as to avoid the five days' detention here after disinfection, and directing me while making the formal inspection of Santa Rosa Quarantine "to investigate the feasibility and make a full report upon the plan of treatment of these particular vessels arriving from Tampico."

The vessels of the Gulf Transit Company, I am informed by Mr. E. O. Saltmarsh, general manager of that company, are only in this port from twenty-four to thirty-six hours when coal is coming in in normal quantity. At present a strike in the coal fields is on, and the three steamers are idle, all three of them being now in this port, the *Pensacola* and the *Dorabrook* in the city, and the *August Belmont* at quarantine undergoing disinfection and detention.

In company with Mr. Saltmarsh I have inspected these vessels (except the *Belmont*, which I saw at quarantine) and find them all well suited to disinfection by the pot method. The *Belmont* carries a Chinese crew, the other two ordinary crews.

The advisability of securing immune crews was stated to Mr. Saltmarsh, but this he considers impossible. It is difficult to secure any crew at all for this particular work in the coal trade, the stay in port being so short. Mr. Saltmarsh also considered the plan of leaving the crew in quarantine and allowing the vessel to come up to the city after redisinfection here as impracticable, for the reason that the masters would not allow their vessels to get from under their immediate charge and that of their regular engineers. Besides there are at present no facilities for detaining crews at the Santa Rosa station.

It would seem, then, that the only practicable means to safely avoid a delay to vessel and crew at quarantine here of five full days after disinfection is to be sure that the process of disinfection at Tampico is thorough and efficient, that there is no possibility of any mosquitoes gaining access to the vessel during or after this disinfection, and that the crew remains well during the voyage and for five days after last possible exposure.

An efficient disinfection at Tampico with the means provided on the vessel is comparatively easy of accomplishment. The crew's health can be observed by attaching an immune medical inspector to each vessel, but I do not believe it is possible, if the disinfection is done in the Panuco River at Tampico, to make sure that no mosquito comes aboard while the vessel is under treatment or leaving the stream after completion.

The vessels' masters inform me that mosquitoes are at times very plentiful in the river at Tampico, their presence or absence being dependent upon the direction and force of the wind. The only certain way to be sure that none come on board is to proceed to sea a certain distance and there do the disinfecting. I believe this plan to be feasible, and the steamship authorities here state that they could arrange for the return of the medical officer to Tampico by launch or small boat after the disinfection was completed.

I have already wired the Bureau recommending the appointment of medical inspectors on these vessels and nominating two immune physicians for the positions.

Respectfully,

T. F. RICHARDSON,
Assistant Surgeon.

The SURGEON-GENERAL.

REPORT ON THE IMPRACTICABILITY OF THOROUGHLY DISINFECTING VESSELS AT TAMPICO AND OTHER PORTS.

The attention of quarantine officers, both at foreign and domestic ports, is called to the following report from Tampico, and especially to that portion of it which relates to the engine rooms and stokeholes of steamers at an infected port and the liability of mosquitoes making these portions of the vessels harbors of refuge:

TAMPICO, MEXICO, August 19, 1903.

SIR: In accordance with instructions contained in Bureau letter of the 31st ultimo I have the honor to submit the following report:

The city of Tampico is situated on the left bank of the Rio Panuco, about 6 nautical miles from its mouth, and has an estimated population of 17,000. About 3 miles below Tampico, on the same bank of the river, is the town or settlement of Doña Cecilia, where the coal docks of the Mexican Central Railway

are located and where the steamers of the Pensacola-Tampico trade are discharged. At the mouth of the Panuco is the small village of La Barra. The hospital of the Mexican Central Railway is located here.

Tampico is surrounded on every side by lagoons and marshes, and these, in conjunction with the rain-water barrels and open cisterns which abound in the city, furnish unequalled breeding places for the mosquito.

Doña Cecilia, which is incorporated with Tampico, as is also La Barra, is almost entirely a settlement of railway employees and dock laborers. These are, or rather were before the epidemic, largely nonimmunes. The dock laborers at present, however, are almost entirely negroes from the British West Indies, the peons who formerly did much of this work having fled from the fever. It is claimed by the physicians here that these negroes are all immune. Doctor Carrigan, surgeon in charge of the railway hospital at La Barra, states that he has never seen a case among them. Doctor Lippincott makes the same assertion.

Tampico and Doña Cecilia are undoubtedly badly infected places. I am informed by physicians who practice here that there is no part of either place in which cases of fever have not originated and are not originating.

At La Barra, however, only a few cases have developed, probably because the strong sea breeze which blows almost constantly keeps the mosquitoes down. The few nonimmune Americans who have thus far escaped the fever have done so by sleeping at La Barra.

The surrounding country, both on the railroad and water routes inland, has had, I am informed, many deaths from yellow fever among persons who have come down to Tampico, sickened there, and started back to their homes. It is said that canoes with natives in them dead or dying of the fever have been found in several instances up the river.

The percentage of deaths, if all cases are reported, is very high. Doctor Matienzo, the physician in charge of the civil hospital, states that it has been over 50 per cent in hospital practice. At the Mexican Central Hospital the results have been better—94 cases, with 36 deaths, since May 18.

Most of the reported cases occurring in Tampico have been sent to the civil hospital, where they are put into screened wards. However, in some cases the patient is allowed to remain at his home, in which event a kind of mosquito house with double doors is erected around the sick bed. There have undoubtedly been many unreported and untreated cases.

The stegomyia is ubiquitous. There is now sitting in Tampico a medical commission sent by the Mexican National Government to investigate and report upon the conditions there. Doctor Del Rio, of this Federal commission, informed me this morning that the town of Victoria, about 250 kilometers north of Tampico on the line of the Monterey and Mexican Gulf Railway, was infected from Tampico, and there had been at the time of his visit last week 5 cases and 1 death.

Since the storm of the 15th instant telegraphic and rail facilities have been interrupted, and there are no recent reports from the interior.

The disinfection of vessels under the supervision of Service officers here has been done entirely in the Panuco River at points marked by red anchors on the accompanying chart. As will be seen by reference to the chart, the river is nowhere much over a third of a mile wide, and I believe it is absolutely impossible to do a satisfactory disinfection at any point in the river, because of the great probability of mosquito contamination of the vessel while or immediately after disinfecting. There are undoubtedly days when, on account of the strong sea breeze, it would be possible to disinfect with safety near the land end of the stone jetty at the mouth of the river, but as the disinfected vessel, if of any size, would have to go up the river again, at least above Doña Cecilia, in order to turn around, she would probably receive a fresh influx of mosquitoes. In fair weather it might be possible to do the disinfection a few miles outside of the mouth of the river without danger of mosquito contamination, but there are, especially at this time of the year, many days when this would not be practicable.

There is, however, a point of extreme importance in this matter of disinfection at infected ports of departure, and that is the possibility of engine and fire rooms harboring infected mosquitoes. I have talked with engineers of steamers on this matter, and they inform me, without exception, that mosquitoes are as bad in the stokeholes and engine rooms when in port as in any other part of their ships, but that after a vessel has been out a day or so the mosquitoes leave these parts. I have not as yet been able to catch any mosquitoes in these compartments of the vessels here that I have visited, but one of the engineers of the

steamer *August Belmont* told me that he had the morning of my visit been bitten by several mosquitoes while working in the stokehole about the boilers.

It would seem that to be effective, fumigation here should comprise the simultaneous treatment of all parts of a vessel, including fire and engine rooms, at some point outside of the seaward end of the jetty. I do not believe, however, that this is feasible. There would be some danger to the safety of a vessel in anchoring in an open roadstead and closing up the engine rooms for at least two hours.

It is therefore my opinion, in view of the widespread character and severity of the epidemic in Tampico and vicinity, the great prevalence of mosquitoes, and the impossibility of disinfecting without danger of mosquito infection during or after the process, that it is impracticable to do an absolutely safe disinfection of outward bound vessels at the port of Tampico at this time, and I would respectfully recommend that the unmodified quarantine regulations be enforced at all Gulf ports against vessels from Tampico.

Respectfully,

T. F. RICHARDSON,
Assistant Surgeon.

The SURGEON-GENERAL.

EARLY PRECAUTIONS AGAINST INTRODUCTION OF YELLOW FEVER INTO TEXAS.

During the month of July, 1903, cases of yellow fever appeared inland along the railway lines in Mexico, as will be seen in the following correspondence, setting forth the precautions taken, even at that early date.

[Telegram.]

WASHINGTON, July 18, 1903.

WERTENBAKER, *New Orleans, La.:*

Direct Halstead ship immediately poles and pins for four tents to Hamilton, Laredo, fast freight.

WYMAN.

YELLOW FEVER REPORTED AT SAN LUIS POTOSI, MEXICO—NOTIFICATION TO INSPECTORS ON MEXICAN BORDER—CAR DISINFECTION.

[Telegram.]

VERA CRUZ, MEXICO, July 31, 1903.

WYMAN, *Washington:*

Reliable newspaper dispatch reports yellow fever San Luis Potosi. Important because close to Texas by rail.

GOLDBERGER.

NOTIFICATION TO INSPECTORS ON MEXICAN BORDER—CAR DISINFECTION ORDERED.

[Telegram.]

AUGUST 1, 1903.

Acting Assistant HUME, *Eagle Pass, Tex.:*

Goldberger, Veracruz, reports yellow fever San Luis Potosi. On account this and other contagious diseases Mexico, Secretary Treasury has determined, under paragraph 147, Quarantine Regulations, through Pullman cars will not be allowed without thorough disinfection, requiring at least twelve hours. Method will be: Preliminary fumigation with pyrethrum powder, 1 pound per thousand cubic feet, two hours' exposure, followed by formaldehyde, per paragraph 165, regulation A or B. Give notice in reasonable time to railroad officials. Inform collector customs. Wire report of action.

WYMAN.

This telegram was repeated to Acting Assistant Hamilton, Laredo, Tex.

REPLIES RECEIVED TO TELEGRAM OF INSTRUCTIONS.

[Telegrams.]

EAGLE PASS, TEX., August 4, 1903.

WYMAN, Washington:

Fresh Pullmans are to be sent here from San Antonio. Mexican Pullman will not cross frontier, but transfer passengers at river to fresh cars. Passengers other than Pullman are always transferred to fresh coaches in Diaz. Any Mexican car entering United States will be disinfected after to-day.

LEA HUME.

LAREDO, TEX., August 2, 1903.

WYMAN, Washington:

Arranged with railroad passengers on Mexican Pullman transfer to American Pullman commencing August 3. Mexican Pullman to remain in Mexico. Therefore no disinfection at present. Detained three passengers from San Luis Potosi to-day.

HAMILTON.

PRECAUTIONS AT EL PASO AGAINST IMPORTATION OF YELLOW FEVER.

AUGUST 4, 1903.

Acting Assistant ALEXANDER, *El Paso, Tex.*:

Are there any through Pullmans or other cars from Mexico at present? Bureau informed yellow fever San Luis Potosi has passed quarantine at Monterey and at Gulf Railroad, and is also at Linares, Ciudad Valles, and Panuco.

WYMAN.

[Reply.]

EL PASO, TEX., August 5, 1903.

WYMAN, Washington:

No direct line from any infected city; passengers arriving on Central from there are carefully inspected; if necessary, detained and their baggage disinfected.

ALEXANDER.

REQUEST FROM STATE HEALTH OFFICER OF TEXAS, RELATIVE TO YELLOW FEVER IN SAN LUIS POTOSI AND TO BORDER RESTRICTIONS.

AUSTIN, TEX., August 3, 1903.

WYMAN, Washington:

Will you kindly wire me what information you have relating to yellow fever in San Luis Potosi and what restrictions you have placed on border? This department will appreciate information as to contagious diseases contiguous to Texas.

TABOR, *State Health Officer.*

[Reply to State health officer.]

AUGUST 4, 1903.

TABOR, *State Health Officer. Austin, Tex.*:

Goldberger, Vera Cruz, wires yellow fever San Luis Potosi; Lippincott, Tampico, writes, dated July 28, infection passed quarantine Monterey and Gulf Railroad, reported Linares, Ciudad Valles, and by river to Panuco. Bureau now requires disinfection through Pullmans at Laredo and Eagle Pass. Griffith, consul, Matamoras, wires no precautions taken at Matamoras against Tampico.

WYMAN.

PRECAUTIONS AT MATAMORAS AGAINST YELLOW FEVER IN MEXICO.

BROWNSVILLE, TEX., *August 3, 1903.*SECRETARY OF STATE, *Washington:*

Yellow Tampico; no precautions being taken at Matamoras opposite Brownsville, Tex.

GRIFFITH,
U. S. Consul at Matamoras.

AUGUST 4, 1903.

Acting Assistant Surgeon COMBE,

Brownsville, Tex.:

Yellow fever reported Tampico and other places in Mexico. No precautions taken at Matamoras. Wire what precautions you deem necessary at Brownsville.

WYMAN.

BROWNSVILLE, TEX., *August 7, 1903.*SURGEON-GENERAL, *Washington:*

In company with American consul interviewed Mexican authorities to-day. They gave us assurances that they would immediately establish observation stations at San Miguel and San Fernando on the only avenues of entrance into Matamoras. No yellow fever along the Rio Grande. Will wire any developments here.

COMBE.

TEXAS STATE QUARANTINE AGAINST SAN LUIS POTOSI REMOVED.

AUSTIN, TEX., *August 9, 1903.*SURGEON-GENERAL, *Washington:*

After thorough investigation I fail to find yellow fever in San Luis Potosi. Have removed Texas quarantine against that place. All actually infected places in Mexico will be rigidly quarantined; have detailed special inspector at San Luis Potosi. Every precaution will be taken by Texas authorities. Rigid inspection will be maintained on frontier. Will advise you of any information this department gets and will appreciate similar courtesy from you.

TABOR,
*State Health Officer of Texas.*WASHINGTON, *August 10, 1903.*

SIR: You are hereby directed to make a quiet inspection of the Gulf coast between New Orleans, La., and Scranton, Miss. Inclosed you will find a list of temporary acting assistant surgeons on duty at the various stations between the points mentioned.

* * * * *
Respectfully,WALTER WYMAN, *Surgeon-General.*

Passed Asst. Surg. C. P. WERTENBAKER,

Public Health and Marine-Hospital Service, New Orleans, La.

[Telegrams.]

WASHINGTON, *August 12, 1903.*State Health Officer TABOR, *Austin, Tex.:*

Hamilton wires three cases yellow fever Victoria, Mexico; one death officially reported.

WYMAN.

WASHINGTON, August 14, 1903.

President LICEAGA, *Superior Board Health, Mexico, Mexico:*

State Health officer Tabor, of Texas, telegraphed August 9, he had withdrawn State quarantine against San Luis Potosi. Bureau wired this to Service inspectors at Laredo and Eagle Pass.

WYMAN.

CONDITIONS AT MONTEREY—PRECAUTIONS TAKEN BY MEXICAN GOVERNMENT.

LAREDO, TEX., August 17, 1903.

SIR: I have the honor to acknowledge telegram dated August 10, 1903, viz: "Proceed Monterey. Submit nomination and place on duty temporary acting assistant and three guards. Upon completion duty rejoin station."

Telegram received in evening late, but selected temporary acting assistant and guards to report to me early in morning for duty. August 11 instructed temporary acting assistant on train; also placed on duty guards, one on foot-bridge, the other two at railroad bridge.

I took afternoon train of August 11 for Monterey and telegraphed Bureau from Nuevo Laredo, Mexico, I had left for Monterey. August 12 arrived at Monterey.

Monterey, Mexico, the capital of the State of Nuevo Leon, has about 75,000 inhabitants, probably more including the municipality, with an area of 26½ square miles. The altitude of city is 1,624 feet. Distance by railroad from Laredo, Tex., 168 miles; from Eagle Pass, Tex., 284 miles; from Tampico, 322 miles; from Victoria (now infected), 175 miles; from Linares (1 case yellow fever in July), 90 miles.

I found the streets fairly clean. The central portion of the city is paved with semivitrified brick and cobblestone. The center of the city is pretty well drained, being rolling. The three trunk lines of railroads, viz, Mexican Central, National de Mexico, and International, have their freight and passenger depots in the same part of city, within a few blocks of each other. This is a low part of the city and water accumulates and stands for some time, therefore a good breeding ground for mosquitoes.

Consul-General Hanna, who had been taking quite an interest in the quarantine and health of city, was pleased that I had come to look over situation; he knew of no cases nor suspicion of cases, and he frequently inquires. Visited railroad engineer reported sick with yellow fever at Monterey Hospital (he was reported at Laredo to be under quarantine or guard) that evening, and I found him not under guard and suffering from an attack of appendicitis.

I saw Doctor Turpin, at one time acting assistant surgeon, Marine-Hospital Service, at Mexico City during 1899. He had not seen anything to arouse his suspicions. He also informed me that he had caught and examined several mosquitoes and as yet had not found any stegomyia.

Morning of the 13th I had a consultation with the governor of the State, who received me cordially and told me the steps he had taken to prevent the introduction of the disease. He confirmed my information about Linares having had yellow fever. He stated the latter part of July a person died there from fever, having come from Tampico. No cases since then, but it now should have a crop from that case, and I therefore consider it suspicious, and persons from there are detained.

The governor informed me that a lazaretto and detention station were being completed at Maguierar, a station on the border line of the State. There are practically no inhabitants at this point. The buildings are to be quite complete, consisting of buildings to accommodate those having disease, suspicious cases, and persons detained but not having any suspicious disease; also accommodations for physicians and employees, etc. This is to be completed about the end of the coming week, so that it can be occupied. It will cost, when finished, \$20,000 (Mexican).

I obtained a written order from the governor to those in charge of death-register records to allow me to see them myself. During the day I made the acquaintance of and interviewed eight physicians, and, although they nearly all had cases of typhoid fever on hand, none had anything suspicious. I had a consultation with the British vice-consul, a practicing physician, who was at Monterey during the former epidemic of 1898, and he assured me of nothing at present. I examined the record of deaths during month of August from 1st to 14th,

inclusive, and found typhoid fever 4, remittent fever 3, pernicious intermittent 1, other causes 80; total, 88 for fourteen days.

The status as I found it at present between Monterey and Tampico is as follows: A shuttle passenger train leaves Tampico daily for a point named Gonzales, 61 miles from Tampico. All passengers are inspected at Tampico, temperature taken, etc. At Gonzales, three hours from Tampico, a change of cars, temperature, pulse, and general condition, with name of person, are noted on a card retained by passenger. Just before arriving at Victoria, the capital of the State, another similar inspection is made and noted on person's card, and all persons destined for Victoria are required to furnish their addresses. Victoria is divided into districts and a physician appointed for each district. These addresses are furnished to physician in charge of district where person resides or lives for the present and the doctor visits him daily for ten days. If anything develops, he is isolated and protected from mosquitoes. Victoria has an altitude of 1,473 feet, population about 10,000, and is about six hours distant by rail from Tampico.

Passengers are again now inspected at State line, where there is a detention station nearing completion. All those showing symptoms are detained. Others have temperature, etc., noted on card, and proceed. Again at Linares an inspection is made, as before, with same precaution. Linares has a population of about 8,000; altitude, 1,187 feet. That is the last inspection on line. No fruit from infected places is allowed to enter Monterey. Freight trains with crews run through to Tampico, but train is supposed to be ready at Tampico for immediate return; but I am informed by railroad employees that sometimes they are delayed there from two to four hours. The crews live in Monterey (which is bad). Cars are disinfected with sulphur dioxide at Gonzales, and since my arrival they have commenced refumigating cars at State line with same disinfectant. I am to be informed of first suspicious case at Monterey.

There is no precaution taken where passenger goes after arrival at Monterey. No disinfection of baggage. Between Victoria and Tampico the Federal and State health authorities are erecting a lazaretto which will cost \$40,000; therefore, I suppose, with sufficient buildings for all purposes, but no detention of well passengers or persons.

After leaving Monterey at a siding called Sanchez, 12 miles from United States border, a quarantine has been established by the city of Nuevo Laredo, Mexico, against Tampico and Victoria, where all persons from those points are detained and a certificate issued to them of such detention; also all persons, not train crew, found on freight trains are arrested and detained irrespective of where they claim to be from. Freight trains as a rule pass this place at night. I found they had six persons in detention taken from freight trains. This is of great benefit to Service at this port, as the freight trains arrive at Nuevo Laredo at night and are broken up as such at that place. The passenger-train inspection does not amount to much.

I believe it is probable that yellow fever will reach Monterey. There has been an abundance of rain and the breeding grounds for mosquitoes about and in Monterey are plentiful.

Respectfully,

H. J. HAMILTON,
*Acting Assistant Surgeon,
Public Health and Marine-Hospital Service.*

The SURGEON-GENERAL.

[Telegrams.]

WASHINGTON, August 17, 1903.

President SOUCHON,
State Board of Health, New Orleans, La.:

Hamilton, Laredo, wires no yellow fever Monterey at present. State Health Officer Tabor has withdrawn quarantine against San Luis Potosí. Liceaga wires yellow fever exists only in Vera Cruz and Tampico.

WYMAN.

WASHINGTON, August 22, 1903.

HAMILTON, Laredo, Tex.:

Nominate and place on duty two guards. * * *

ACTING ASSISTANT SURGEON HAMILTON'S REPORT UPON INSPECTION AT FERRIES IN VICINITY OF LAREDO.

August 21, 1903.—To-day four persons, three days from Vera Cruz, arrived on morning train at Nuevo Laredo, Mexico. They had some baggage. Public Health and Marine-Hospital Service guard detected them. It appears they crossed to this side one by one during the day on skiffs or by ferry a short distance below footbridge, but were detected in city by immigration detective and taken to detention camp. Their baggage had not as yet arrived. They had arranged to have it sent to a hotel on this side. I informed hotel keeper and told him if baggage arrived during the night to have it sent to detention camp for disinfection, as it was from Vera Cruz. Two of these persons were naturalized Americans of Greek nationality; others were Greeks not naturalized. They informed me that they learned on train that they would not be allowed entry on railroad train or footbridge, so they watched their chance and came over singly by skiff. They had been told in Nuevo Laredo, where the skiffs were let. I therefore wired Bureau authority to nominate two guards to watch these skiffs or ferries. There are several in neighborhood of city.

August 22, 1903.—Temporary guards, two in number, placed on duty to-day; one at most frequent skiff ferry; the other will be one night at detention camp watching detained persons, and he will be sent to-morrow to notify all skiffs not landing where I have a guard placed to inspect them not to carry passengers from México to this side. This guard, in conjunction with United States inspector, will see that skiffs do not land passengers except only at one designated place.

YELLOW FEVER AT LINARES, MEXICO—REPORTED PRESENT AT MONTEREY.

[Telegrams.]

LAREDO, TEX., *August 27, 1903.*WYMAN, *Washington:*

There have been 14 deaths from yellow fever at Linares August 24. Yellow fever is now present in Teran, 50 miles from Monterey. There is an uneasy feeling prevailing Monterey. It is rumored 2 cases suspected yellow fever at Monterey. Think disease was brought by refugees and other passengers from Linares.

HAMILTON.

YELLOW FEVER AT MONTEREY—ORIGINATED AT LINARES.

LAREDO, TEX., *August 29, 1903.*WYMAN, *Washington:*

One case suspected yellow fever at hotel, Monterey. August 25, taken hospital, Monterey. August 26, taken yellow-fever hospital near Victoria. There is 1 case reported at Monterey; reliable. Originated Linares. Gave information to State health authorities of Texas.

HAMILTON.

TEXAS QUARANTINE AUTHORITIES CUT OFF COMMUNICATION WITH MONTEREY, LINARES, AND VICTORIA.

LAREDO, TEX., *August 29, 1903.*WYMAN, *Washington:*

The State quarantine officer telegraphs cut off communication from Monterey, Linares, Victoria. No one to enter Texas from these points under five days. Cordon needs strengthening to meet new conditions.

HAMILTON.

NO CASES OF YELLOW FEVER HAVE ORIGINATED AT MONTEREY.

AUGUST 31, 1903.

HAMILTON, *Laredo, Tex.*:

It is understood no cases have originated in Monterey and that sick refugees are now isolated in hospital. Wire further facts.

GLENNAN.

LAREDO, TEX., *September 1, 1903.*

WYMAN:

No cases known to have originated in Monterey. Consul-general states effective detention quarantine now established against infected points. Many rumors—nothing definite. * * *

HAMILTON.

WASHINGTON, *August 27, 1903.*

State Health Officer TABOR, *Austin, Tex.*:

Hamilton wires: "Yellow fever now present in Linares in epidemic form. Monterey has quarantine, requiring five days' detention."

WYMAN.

WASHINGTON, *August 31, 1903.*

SOUCHON, *New Orleans, La.*:

Hamilton at Laredo wires one case at Monterey isolated in hospital, originated in Linares. United States detains passengers from infected districts. Inform health officer Texas requires five days' quarantine upon all persons from Monterey, Linares, and Victoria.

By direction Surgeon-General.

GLENNAN,
Assistant Surgeon-General.

WASHINGTON, *September 11, 1903.*

HAMILTON, *Laredo, Tex.*:

Authorized to continue not to exceed thirty days three temporary guards named in your letter September 5.

WYMAN.

WASHINGTON, *September 12, 1903.*

RICHARDSON, *Care United States Consulate, Tampico, Mexico*:

Upon return of Frick, you are relieved from duty at Tampico. Rejoin your station at New Orleans. Inspect en route Linares, Monterey, Victoria, Mexico; Laredo, Eagle Pass, Tex. Wire arrival and departure each place.

WYMAN.

QUARANTINE STATION ESTABLISHED BY MEXICAN AUTHORITIES ON THE MEXICAN NATIONAL RAILROAD—DETENTION OF PASSENGERS.

LAREDO, TEX., *September 5, 1903.*

SIR: I have the honor to inform the Bureau that a quarantine station has been established 12 miles from the border, on the Mexican National Railroad, by the Mexican authorities for the purpose of detaining for five days (complete) all persons from Monterey, Mexico, or any place infected with yellow fever. There are no habitations near said station and the railroad company has placed two passenger coaches on switch for accommodation of persons detained. They also have several tents. This has simplified the quarantine situation here considerably.

Since the establishment of said station only one person has passed that station—that is, he escaped. We were immediately notified and he was in Laredo only a few hours when found and returned to the Mexican authorities. The through Mexico train (passenger) does not stop between Saltillo and Lampazos, 68 miles south of Monterey and 95 miles north of Monterey, either going north or south. Persons boarding train at Saltillo have United States consular certificates as evidence of having been there five or more days. Freight-train crews from Nuevo Laredo, Mexico, do not run to Monterey, but receive their trains at a station this (north) side of Monterey.

State Health Officer G. R. Tabor, after visiting Monterey, thought it advisable to continue quarantine. He informed me he would send an inspector there. I have not learned of any yellow-fever cases originating in Monterey, Mexico.

Respectfully,

H. J. HAMILTON,
Acting Assistant Surgeon.

[Telegrama.]

DETENTION AND DISINFECTION OF MAIL FROM MONTEREY.

LAREDO, TEX., *September 13, 1903.*

WYMAN, *Washington:*

Texas Inspector at Monterey reports ten days' detention and disinfection of mail from Monterey.

HAMILTON.

YELLOW FEVER AT MONTEREY—DETENTION AND DISINFECTION OF MAIL.

LAREDO, TEX., *September 13, 1903.*

WYMAN, *Washington:*

Texas inspector at Monterey reports yellow fever now present in Monterey. Texas now requires ten days' detention and disinfection of mail from Monterey.

HAMILTON.

YELLOW FEVER AT NUEVO LAREDO, MEXICO.

AUSTIN, TEX., *September 15, 1903.*

WYMAN, *Washington:*

One case yellow fever officially reported, after necropsy, at Nuevo Laredo, Mexico. I go there to-night to personally conduct quarantine, which will prohibit all communication with Mexico.

TABOR, *State Health Officer.*

EPIDEMIC DENGUE REPORTED AT NUEVO LAREDO, SUSPECT YELLOW FEVER.

LAREDO, TEX., *September 15, 1903.*

WYMAN, *Washington:*

The local authorities report epidemic dengue, Nuevo Laredo, Mexico. Physician died yesterday with black vomit; sick five days. Had jaundice. Necropsy to-day. Present, State quarantine officer, U. S. Army surgeon, the health officer of Laredo, the local board of health, self. Diagnosis, suspicious yellow fever; another person urine contains albumen and bile; another urine contains albumin; both jaundice. Is very suspicious; have quarantined. State health officer and chief U. S. Army surgeon Department of Texas, will be here to-morrow. Think the disease was introduced by person from Victoria, Mexico. Shall have a consultation and will advise you of result.

HAMILTON.

PRECAUTIONS AGAINST IMPORTATION OF YELLOW FEVER—CAMP EQUIPMENT.

WASHINGTON, *September 16, 1903.*HAMILTON, *Laredo, Tex.:*

Have wired State health officer that you will cooperate. Will order sent you by freight to-day additional tentage and camp equipage for 100 people. This simply by way of anticipation. Service officers also will be ordered as preventive against emergency, but you will retain your present duties if they come.

WYMAN.

WASHINGTON, *September 16, 1903.*HUME, *Eagle Pass, Tex.:*

Have wired State health officer you will cooperate with him. Wire requisition for any additional equipment or help needed.

WYMAN.

[Telegrams.]

WASHINGTON, *September 16, 1903.*VON EZDOERF, *Matanzas, Cuba:*

Relieved Matanzas. Proceed by first steamer to New Orleans. Wire arrival. Instructions will be sent you to proceed to Laredo for protection against yellow fever. Nunez, Cienfuegos, ordered to relieve you.

WYMAN.

WASHINGTON, *September 16, 1903.*GUITERAS, *Cairo, Ill.:*

Be prepared for orders temporary duty Laredo. Situation there acute. May have to wire you to-morrow, and you may have to leave hospital with temporary acting assistant pending arrival of assistant.

WYMAN.

SPREAD OF YELLOW FEVER IN STATE OF TAMAULIPAS, MEXICO—NECESSITY FOR QUARANTINE.

[Telegrams.]

BROWNSVILLE, TEX., *September 16, 1903.*WYMAN, *Washington:*

Spread of yellow fever epidemic in the State of Tamaulipas requires the immediate establishment of a rigid quarantine against the entire State.

MARIS, *Collector.*WASHINGTON, *September 21, 1903.*COLLECTOR CUSTOMS, *Brownsville, Tex.:*

Thanks for information—your telegram 16th. Guards will be authorized, if necessity arises, under supervision Acting Assistant Surgeon Combe, upon plan now in operation at Laredo and Eagle Pass.

WYMAN.

WASHINGTON, *September 17, 1903.*Acting Asst. Surg. J. K. COMBE, *Brownsville, Tex.:*

Confer with collector customs and wire recommendations regarding necessity establishment quarantine against introduction yellow fever. Report regarding conditions.

WYMAN.

BROWNSVILLE, TEX., *September 18, 1903.*WYMAN, *Washington:*

Matamoras is now quarantined against all infected points in Mexico, and every precaution being taken by the Mexican authorities there to prevent introduction of yellow fever. Do not think quarantine between Brownsville and Matamoras at present necessary. Collector should be authorized to appoint a number of guards for emergency.

J. K. COMBE, *Acting Assistant Surgeon.*WASHINGTON, *September 21, 1903.*Acting Assistant Surgeon COMBE, *Brownsville, Tex.:*

If necessity arises you will be authorized to employ guards under your supervision.

WYMAN.

GUARDS AND CAMP EQUIPMENT AT EAGLE PASS.

EAGLE PASS, TEX., *September 19, 1903.*WYMAN, *Washington:*

County and State anxious over fever situation. Four additional guards and camp outfit absolutely necessary for protection. Will put all suspects in camp.

HUME.

WASHINGTON, *September 21, 1903.*HUME, *Eagle Pass, Tex.:*

Submit nomination by letter and place on duty immediately four additional guards. Twelve tents and outfit ordered shipped you from New Orleans.

WYMAN.

GUARDS AT LAREDO, TEX.

WASHINGTON, *September 21, 1903.*HAMILTON, *Laredo, Tex.:*

You are authorized to employ four additional guards 18th. Why are two additional mounted guards necessary, as requested your message 20th? Wire present situation.

WYMAN.

QUARANTINE ON TEXAS BORDER—YELLOW FEVER AT NUEVO LAREDO.

AUSTIN, TEX., *September 17, 1903.*WYMAN, *Washington:*

Thanks for your assistance. Texas Rangers will aid us on border, as well as other guards. Quarantine at Laredo is perfect. I was there yesterday. Saw one case yellow fever. Mexican officials claim epidemic of dengue, but it is evidently yellow fever. No cases on Texas side.

TABOR, *State Health Officer.*

ATTEMPTS AT NUEVO LAREDO, MEXICO, TO BREAK THROUGH RIVER CORDON.

LAREDO, TEX., *September 18, 1903.*WYMAN, *Washington:*

County Judge and postmaster Zapata County telegraphs this morning: "People from Nuevo Laredo, Mexico, attempting to cross at various points. Need at least four more guards for few days." Request authority to employ guards.

HAMILTON.

ADDITIONAL GUARDS FOR ZAPATA COUNTY.

WASHINGTON, *September 18, 1903.*HAMILTON, *Laredo, Tex.:*

Place on duty and submit nomination to Bureau by letter four additional guards for Zapata County.

PURVIANCE, *Acting Surgeon-General.*LAREDO, TEX., *September 21, 1903.*WYMAN, *Washington:*

Regarding matter mentioned in your telegram, September 21, guard line covers about 300 miles river. On duty, Bureau guards, Zapata, 10; Webb, 18; Texas guards, 8; city Laredo, 3; Webb County, 2; Zapata County, 12; the customs officer, 10 for night and day; about 50 skiffs and 50 fords in territory guarded. Two guards are needed at 15 miles from Laredo to watch 5 miles of river where are 3 skiffs. The vice-consul reports dengue epidemic raging Nuevo Laredo, Mexico; few deaths; believes no cases yellow fever exist. This is the situation at the present writing, but it may change at any moment.

HAMILTON.

QUARANTINE AT LAREDO, TEX.—EPIDEMIC DENGUE.

LAREDO, TEX., *September 18, 1903.*WYMAN, *Washington:*

Laredo, Mexico, authorities claim yellow fever does not exist. Case seen now convalescent. Officials report no suspicious cases there. Epidemic dengue acknowledged. Total guards, including customs, immigration, State, county, city, and Bureau, 52, all under supervision of customs inspectors, cover 100 miles frontier.

HAMILTON.

LAREDO, TEX., *September 20, 1903.*WYMAN, *Washington:*

Arrived Laredo. Have inspected Service quarantine. City, State, and Service working in harmony and efficiently.

* * * * *

Leaving for New Orleans to-morrow.

RICHARDSON.

YELLOW FEVER IN MONTEREY.

LAREDO, TEX., *September 21, 1903.*WYMAN, *Washington:*

Texas Inspector at Monterey reports yellow fever is now present in Monterey. Will return to Texas via Eagle Pass, Tex.

HAMILTON.

MONTEREY, *September 23, 1903.*SECRETARY OF STATE, *Washington:*

Doctors report yellow fever in Monterey. Hope to control it.

HANNA, *Consul-General.*

ASSISTANT SURGEON RICHARDSON ORDERED TO RETURN TO LAREDO, TEX.

WASHINGTON, *September 16, 1903.*RICHARDSON, *U. S. Consulate, Tampico, Mexico:*

Orders amended. Return direct via Laredo. On arrival Laredo, inspect Service quarantine there and wire any necessary recommendations. If too ill, wire from Laredo and go on.

WYMAN.

ACTING ASSISTANT SURGEONS AT LAREDO AND EAGLE PASS TO COOPERATE WITH
STATE HEALTH OFFICER.

WASHINGTON, *September 17, 1903.*

State Health Officer TABOR, *Austin, Tex.:*

Have instructed Acting Assistant Surgeon Hamilton, Laredo, and also Hume, Eagle Pass, to cooperate with you and to wire Bureau promptly requisitions for equipment needed for additional help.

WYMAN.

MOSQUITO NETTING FOR USE AT EAGLE PASS AND LAREDO.

WASHINGTON, *September 17, 1903.*

WERTENBAKER, *Marine Hospital, New Orleans, La.:*

Ship 50 mosquito bars from Camp Hutton to Hume, Eagle Pass, Tex. All articles sent to Laredo and Eagle Pass should be in serviceable condition.

WYMAN.

GUARDS FOR WEBB AND ZAPATA COUNTIES.

WASHINGTON, *September 17, 1903.*

HAMILTON, *Laredo, Tex.:*

Submit nomination by wire and immediately place on duty 6 mounted guards Zapata County and 12 additional mounted guards Webb County. * * *

WYMAN.

CAMP EQUIPMENT FOR EAGLE PASS.

WASHINGTON, *September 21, 1903.*

WERTENBAKER, *Marine Hospital, New Orleans, La.:*

Ship to Hume, Eagle Pass, Tex., from Camp Hutton, by fast freight, 12 tents, 12 by 14, complete, with flies, floors, frames, poles, and pins; 50 camp stools; 2 Buzzacott ovens; cots, mattresses, and pillows, 50 each; pillowcases and sheets, 200 each; 50 additional mosquito bars, and 50 blankets.

WYMAN.

SUSPECT YELLOW FEVER AT LAREDO, TEX.

LAREDO, TEX., *September 22, 1903.*

WYMAN, *Washington:*

Two cases suspected yellow fever at Laredo, Tex.; personally examined one; found suspicious history, jaundice, vomiting; urine contains albumin; has been sick three days; information given the State health authorities. There is an uneasy feeling prevailing. This is the situation at present writing, but it may change for the worse at any moment. The consul reports no cases suspicious yellow fever at Nuevo Laredo, Mexico. Better advise Spohn conditions.

HAMILTON.

DENGUE AT LAREDO, TEX.

LAREDO, TEX., *September 22, 1903.*

WYMAN, *Washington:*

Sixteen dengue Laredo, Tex.; 11 specimens urine examined; urine contains albumin, 7; a few have vomiting; no deaths.

HAMILTON.

MOSQUITO NETTING ADVISED TO BE USED AT LAREDO.

WASHINGTON, *September 22, 1903.*HAMILTON, *Laredo, Tex.:*

Guiteras from Cairo, Von Ezdorf, and Frick ordered to Laredo, Tex. Dengue conveyed by mosquito. Suggest immediate use netting and method described page 1213, Public Health Reports, July 31. Have wired Tabor suggesting he order this.

WYMAN.

SURGEON GUITERAS ORDERED TO LAREDO.

WASHINGTON, *September 22, 1903.*GUITERAS, *Marine Hospital, Cairo, Ill.:*

Nominate, place on duty acting assistant. Take first possible train to Laredo. Wire departure and arrival. Hamilton wires 16 cases dengue, 7 with albumin; no deaths. Dengue also in Nuevo Laredo and 1 case of yellow, fatal. Camp outfit complete for 100, including mosquito bars, should reach Laredo to-morrow. Von Ezdorf will arrive by Monday. Frick ordered from Tampico. On arrival investigate, wire facts and recommendations. Have wired Hamilton and Tabor advising Habana method, even for dengue, as described in Public Health, July 31.

WYMAN.

In anticipation of a situation such as existed at this time at Laredo, the Bureau had published in Public Health Reports of July 31, 1903, a paper read by Dr. John Guiteras before the First International Sanitary Convention of American Republics in Washington, December, 1902, narrating in detail the methods successfully adopted for the suppression of the spread of yellow fever in Habana, with a note stating that the paper would be of practical value at any port or place where yellow fever might exist, whether in epidemic or sporadic form, and that the same precautions should be taken with regard to cases suspected of being yellow fever. Attention was also called to the necessity of putting the precautions indicated around the first case. One object in making this publication was to have for ready reference, wherever the Public Health Reports were received, full details of how to suppress the disease.

DENGUE CASES PRESENT INDICATIONS OF YELLOW FEVER—USE OF MOSQUITO NETTING ADVISED.

WASHINGTON, *September 22, 1903.*State Health Officer TABOR, *Austin, Tex.:*

Hamilton wires 16 cases dengue Laredo, 7 with albumin. Have ordered two officers there. Recent writers declare dengue conveyed by mosquito, therefore believe these cases should be guarded by mosquito netting and in manner described page 1213, Public Health Reports, July 31. One hundred and fifty mosquito nets were sent Laredo last week. Will you order their use?

WYMAN.

WASHINGTON, *September 23, 1903.*Surgeon MURRAY, *Key West, Fla.:*

Dengue and suspicious cases at Laredo. Leave hospital in temporary charge of acting assistant surgeon; proceed first available route to New Orleans. Wire Bureau date of departure and probable arrival at New Orleans. Will have Wertenbaker or assistant meet you at train if decided you should immediately proceed. Otherwise await orders and wire address. If you go to Laredo, it will be as Inspector and diagnostician. Guiteras, von Ezdorf, and Frick will be there.

WYMAN.

WASHINGTON, September 23, 1903.

HAMILTON, Laredo, Tex.:

Authorized rent building mentioned your telegram September 22. Wire immediately when camp outfit has arrived. Unpack mosquito netting at once and authorized to use in any way you see fit.

WYMAN.

ACTING ASSISTANT SURGEON FRICK ORDERED TO LAREDO.

WASHINGTON, September 22, 1903.

FRICK, U. S. Consulate, Tampico, Mexico:

Instruct Lippincott to continue disinfections and proceed immediately to Laredo and report to Hamilton. Wire departure and arrival.

WYMAN.

GUARDS FOR LAREDO.

WASHINGTON, September 22, 1903.

HAMILTON, Laredo, Tex.:

Submit nomination by letter and place on duty immediately two additional mounted guards * * * for duty 15 miles from Laredo.

WYMAN.

DETAIL OF OFFICERS FOR DUTY AT LAREDO—MEASURES ADVISED SHOULD CONDITIONS GROW WORSE.

WASHINGTON, September 23, 1903.

State Health Officer TABOR, Austin, Tex.:

Have ordered following officers to Laredo: Murray, from Key West, as diagnostician; will await orders at New Orleans, and can reach Laredo Saturday morning. Assistant Surgeon Frick, from Tampico. Passed Assistant Surgeon Von Ezdorf, from Matanzas, should arrive about Saturday night or Sunday. Pharmacist Walerius, from St. Louis, and Surg. G. M. Gutleras, from Cairo, Ill. Last named will be Bureau representative in active measures, his superior, Murray, being detailed as expert diagnostician. Interstate quarantine regulations, Treasury Department, require surveillance of people leaving infected locality. If conditions grow worse, experience indicates rapid depopulation at Laredo at once, most probable destination along lines leading to San Antonio and Corpus Christi. Deem necessary, therefore, surveillance of people leaving Laredo, list of passengers and destinations being taken at ticket office, and health authorities at destination notified to keep them under observation, immediately isolating any arriving sick.

Train-inspection service should be immediately established between at least Laredo and San Antonio and Laredo and Corpus Christi, and authorities at both points notified to look out for passengers from Laredo and secure their isolation if necessary.

Necessity of detention camp may be determined later. Complete outfit for 100 was sent last week and is probably in Laredo to-day.

Gutleras instructed to confer with you. He left Cairo 1 p. m. to-day.

If you will select four medical inspectors, two for each road from Laredo, and place them on duty, Bureau will have them appointed. * * * Wire their names promptly.

WYMAN.

MEDICAL INSPECTORS APPOINTED.

AUSTIN, TEX., September 23, 1903.

WYMAN, Washington:

Will go to Laredo to-morrow, and if cases are yellow fever will put train-inspection service into immediate effect. Will remain there until arrival of

your representatives. Will be glad to confer with them and hope we will be able to assist each other. I have selected following medical inspectors at your suggestion and directed them to report to-morrow at Laredo: P. M. Rayson, B. V. Ellis, R. L. Dinwiddle, A. G. Barnhill.

TABOR.

DENGUE CASES PRESENT INDICATIONS OF YELLOW FEVER—WILL USE MOSQUITO NETTING.

AUSTIN, TEX., *September 23, 1903.*

WYMAN, *Washington:*

Several cases dengue reported Laredo. but presence of albumin and absence of malaria plasmodia indicate yellow. Wire me names of officers ordered there and when will they arrive. I will meet them there. Have directed use of mosquito netting you sent.

TABOR.

PHARMACIST WALERIUS ORDERED TO LAREDO.

WASHINGTON, *September 23, 1903.*

Pharmacist WALERIUS

(through medical officer in command).

Marine Hospital, St. Louis, Mo.:

Take first train possible for Laredo, Tex. Report to Surgeon Guiteras for duty in connection with epidemic dengue, possibly yellow. Wire departure.

WYMAN.

Pyrethrum powder for use at Laredo.

WASHINGTON, *September 23, 1903.*

WERTENBAKER, *Marine Hospital, New Orleans, La.:*

Ship immediately by express 200 pounds pyrethrum powder to Hamilton, Laredo.

WYMAN.

WASHINGTON, *September 24, 1903.*

Surgeon MURRAY, *Key West, Fla.:*

* * * Pharmacist Stier ordered from Tampa Bay during your absence. Your relations with Guiteras should be the same as with Tabor, that of co-operation. Necessary for Bureau to have clearly defined organization. You are expert diagnostician at Laredo and to decide upon suspected cases at any other places, and you must therefore be free from administrative duties. Guiteras will have charge of these latter. You should wire Bureau direct and give all reasonable information to Guiteras and Tabor. From later information no necessity your stopping at New Orleans; proceed Laredo.

WYMAN.

WASHINGTON, *September 24, 1903.*

WERTENBAKER, *New Orleans, La.:*

Von Ezdorf took steamer *Havana* Tuesday, 22d; should arrive New Orleans Saturday morning. Deliver telegram immediately on arrival and give or send him transcript of the following, which is also for your information, and at present partly confidential. One death yellow fever, Laredo, Mexico; 16 cases dengue Laredo, Tex., 7 with albumin. Tabor thinks some may be yellow fever, but diagnosis is not made. Guiteras arrives there to-morrow night in administrative charge. Murray will arrive about Saturday night as expert

diagnostician Laredo and surrounding places. Frick leaves this morning from Tampico. Tabor will be there to-night, and probably will to-morrow place train-inspection service from Laredo with Service acting assistants nominated by him. Wire me any information you receive from New Orleans. Have notified Souchon confidentially of the situation. Will mail you copies of telegrams for further information. May require you to consult with Souchon.

WYMAN.

WASHINGTON, September 24, 1903.

VON EZDORF, *New Orleans, La.:*

Proceed immediately Laredo and report to Guiteras.

WYMAN.

WASHINGTON, September 25, 1903.

GUITERAS, *Laredo, Tex.:*

On arrival confer with Tabor. Bureau position will be, as in all previous like occasions, as follows: Treasury regulations are expected to be enforced and State health authorities to enforce them. Bureau will assist State health officer. Frick has had experience in train-inspection service, and advise you to place him in charge of that work. Pending your arrival I authorized Tabor to nominate four train inspectors, which he has done, and they have been appointed acting assistant surgeons. Request Hamilton to show you all telegrams received from me. Believed here good opportunity for demonstrating possibility of restricting spread of fever by new methods, as at Habana, screening patients and destroying mosquitoes.

WYMAN.

WASHINGTON, September 25, 1903.

Acting Asst. Surg. H. S. BURKE, *Corpus Christi, Tex.:*

Hamilton reports 2 cases yellow fever at Laredo. This Bureau has appointed medical train inspectors to supervise travel at Laredo.

WYMAN.

WASHINGTON, September 25, 1903.

Acting Asst. Surg. J. K. COMBE, *Brownsville, Tex.:*

Three guards nominated by you approved. * * *

WYMAN.

WASHINGTON, September 25, 1903.

HAMILTON, *Laredo, Tex.:*

Referring to my telegram September 22, is mosquito netting being used? Wire full report of what is being done to prevent spread in Laredo. Expressed 500 yards mosquito netting from New Orleans yesterday, but pending arrival, if necessary, should purchase in Laredo if possible and use. State health officer coincides.

WYMAN.

ARRIVAL OF SURGEON GUITERAS.

LAREDO, TEX., September 25, 1903.

WYMAN, *Washington:*

Arrived this afternoon. Have met Tabor.

GUITERAS.

SURVEILLANCE OF PERSONS LEAVING LAREDO AND TRAIN INSPECTION CONSIDERED NECESSARY.

WASHINGTON, September 25, 1903.

GUITERAS (care Hamilton), *Laredo, Tex.* (to arrive):

For your information I send you following copy of portion telegram wired Tabor September 23: "Interstate quarantine regulations Treasury Department require surveillance of people leaving infected locality. If conditions grow worse, experience indicates rapid depopulation of Laredo at once; most probable destination along lines leading to San Antonio and Corpus Christi. Deem necessary, therefore, surveillance of people leaving Laredo, list of passengers, and destination being taken at ticket office and health authorities at destination notified to keep them under observation, immediately isolating any arriving sick. Train-inspection service should be immediately established at least between Laredo and San Antonio and Laredo and Corpus Christi, and authorities at both points notified to look out for passengers from Laredo and secure their isolation if necessary. Necessity of detention camp may be determined later."

WYMAN.

POST-MORTEM CONFIRMS DIAGNOSIS OF YELLOW FEVER.

LAREDO, TEX., September 25, 1903.

WYMAN, *Washington*:

All sanitary authorities here concur that the 2 deaths here to-day were yellow. Necropsy performed in one case typical. There are two separate foci of infection known at present. Three suspicious cases have been reported.

GUITERAS.

EMPLOYMENT AND PAYMENT OF GUARDS.

WASHINGTON, September 26, 1903.

Surgeon GUITERAS, *Laredo, Tex.*:

Regarding expenditures, State, city, and county authorities are expected to render all assistance possible. This has been the rule in other epidemics. If necessary to employ personal service of any character, nominations by name and rate must be promptly wired Bureau, as must also any contemplated expenditure. If in emergency the expenditure must be made, notify Bureau. Who is paying for the disinfecting gangs you started to-day? Walerius can render you much assistance in keeping finances straight, and, if necessary, you are authorized to nominate a clerk for him.

WYMAN.

[Reply.]

LAREDO, TEX., September 26, 1903.

WYMAN, *Washington*:

City and county have no funds; State has employed guards along border. We are paying for disinfecting gangs.

GUITERAS.

PYRETHRUM POWDER FOR USE AT LAREDO.

NEW ORLEANS, LA., September 26, 1903.

WYMAN, *Washington*:

Guiteras wires me to forward 500 pounds pyrethrum powder by express. Am sending it and request Bureau approval, also authority to honor similar regulations.

WEBSTERAKER.

THREE SUSPICIOUS CASES—HOUSE DISINFECTION.

LAREDO, TEX., *September 26, 1903.*WYMAN, *Washington:*

Have seen 3 suspicious cases to-day. Disinfected $7\frac{1}{2}$ houses containing 24 rooms.

GUITERAS.

PLAN OF CAMPAIGN AGAINST INTRODUCTION AND SPREAD OF YELLOW FEVER.

LAREDO, TEX., *September 26, 1903.*WYMAN, *Washington:*

Present plan of campaign is as follows: (1) Exterminate local infection, following methods employed in Habana; (2) to prevent introduction of any new infection from without; (3) to prevent spread of the disease to other localities. The first item was put in operation this morning. The second has been in operation for some time and is fairly efficient as far as work on the border is concerned. However, consular certificates of five days from yellow-fever foci are discredited. Would suggest appointment of good medical inspectors at San Luis Potosi and Saltillo. The third is principally in Tabor's hands. The State has quarantine against Laredo, and only through passenger traffic to points north of Arkansas, Indian Territory, and Ohio River permitted. All traffic with Corpus Christi is stopped. We are making efforts to reestablish it. Tabor has not yet agreed to train inspection. There is nothing to prevent passengers getting off along the line except local quarantines. These are effective enough at stations, but it is possible for passengers to get off between stations. About three thousand people have left Laredo since the 16th instant.

GUITERAS.

PREMISES OF YELLOW-FEVER CASES DISINFECTED—LAREDO PLACED UNDER STRICT QUARANTINE.

LAREDO, TEX., *September 26, 1903.*WYMAN, *Washington:*

Frick arrived this morning; have disinfected premises of two fatal cases; will disinfect surroundings this afternoon; no new cases reported. Tabor has put Laredo under strict quarantine. Through passenger traffic for points outside of Texas opened up this morning with notification of proper health authorities. Camp outfit and mosquito netting not arrived; it is an urgent need, as supply here is very small. Have employed about 20 men and divided them into two mosquito gangs. Request authority to order material, if necessary, from Wertenbaker.

GUITERAS.

DETENTION CAMP OUTFIT TO BE HELD AT CACTUS.

WASHINGTON, *September 26, 1903.*Surgeon GUITERAS, *Laredo, Tex.:*

Referring to detention camp due to arrive, have it sidetracked and retained on cars at some point outside Laredo, say Cactus, until otherwise ordered.

WYMAN.

USE OF PETROLEUM IN WATER BARRELS AND CISTERNS.

LAREDO, TEX., *September 25, 1903.*WYMAN, *Washington:*

Mosquito netting used. Fumigation with sulphur. Petroleum in water barrels and cisterns. Cleaning up of weeds and burning is being done slowly. City short of money. Two cases died to-day. Three cases not confirmed on hand.

HAMILTON.

UNCONDITIONAL QUARANTINE AGAINST LAREDO.

LAREDO, TEX., *September 25, 1903.*WYMAN, *Washington:*

From information which I have obtained here yellow has probably existed in Nuevo Laredo for six weeks and in Laredo for two. The two fatal cases reported in prior telegram form two distinct foci. I fear we will find others. All counties along the International and Great Northern, including Bexar (San Antonio), have quarantined Laredo unconditionally. The road to Corpus Christi has stopped all traffic. It is hoped that the influence of Tabor and the quarantine measures taken here will relieve the situation and inspire confidence. Conference held here to-night with city, county, and State authorities. Tabor assumes charge, accepts our cooperation, and leaves me a free hand to handle the situation. Wire if this acceptable to Bureau. I will start two gangs disinfecting and screening to-morrow. The authorities of Nuevo Laredo confess to 6 cases yellow and 4 deaths. The border here appears well protected. Reports on cases of dengue in Nueces County have just been received. No Service officers have arrived here, nor the camp equipment.

GUITERAS.

[Reply.]

WASHINGTON, *September 26, 1903.*Surgeon GUITERAS, *Laredo, Tex.:*

Arrangement with Tabor, as in your wire received to-day, acceptable to Bureau. Your efforts, of course, then will be to prevent spread in Laredo and prevent its reaching other towns, and Bureau expects you to plan and operate accordingly. Wire fully your plans, that Bureau may cooperate with or advise you. Bureau's views have already been given you and Tabor. Notify if you think detention camp will be needed. Also wire Bureau daily the situation. Souchon has Nolte at San Antonio for observation. Von Ezdorf and Pharmacist Walerius should arrive shortly. Advise you allow Hamilton to continue his customary work. He has been notified, however, that you are in command. Financial matters in succeeding telegram.

WYMAN.

On September 26, 1903, telegraphic inquiry was made by the Bureau of the acting assistant surgeon stationed at Corpus Christi, Tex., as to rumors of the presence of dengue in that vicinity, and a negative reply was received the following day.

Passed Asst. Surg. R. H. Von Ezdorf, an immune to yellow fever, arrived at Laredo, Tex., September 27 and reported to Surgeon Guiteras for duty. At the same time a house-to-house inspection of Laredo was undertaken by the State and municipal authorities, and the Service camp outfit, already at that point, was placed at the disposal of the State health officer at his request.

SIX NEW CASES—DETENTION CAMP TO BE ESTABLISHED AT SANCHEZ.

LAREDO, TEX., *September 27, 1903.*WYMAN, *Washington:*

Six new cases to-day; one death. Tabor has again stopped through passenger traffic from Laredo to points north. Mexico is still open for those who desire to leave, but at present there is little desire expressed to leave the city. A house-to-house inspection will probably commence Tuesday. Tabor desires to establish camp for 25 persons at Sanchez, 5 miles from Laredo, and requests loan of outfit, be to pay all running expenses and to have charge Service representation, if desired. Detention, ten days. Tabor does not accept mosquito theory in toto, and old quarantine methods are in vogue. Recommend that his request for camp be granted. Am confining my efforts principally to mosquito disinfection and prevention of entrance of new infection. Will have four sections at work to-morrow. The situation is grave.

GUITERAS.

WASHINGTON, September 26, 1903.

Dr. EDMOND SOUCHON,

President State Board of Health, New Orleans, La.:

Inspectors on all trains out of Laredo were ordered day before yesterday. Are you going to keep Nolte in San Antonio for observation? Believe it would be wise for present at least. Am advised no trains running from Laredo to Corpus Christi. Also informed all counties along the International and Great Northern, including Bexar (San Antonio), have quarantined against Laredo unconditionally. Kindly show this to Wertenbaker. Am sending additional officers for future emergencies.

WYMAN.

WASHINGTON, September 26, 1903.

Acting Assistant Surgeon HAMILTON,

Laredo, Tex.:

Referring to my telegram September 16th, I have advised Guiteras to continue you in your present work; but there can be but one head, and Guiteras is in command, and you will accept directions from him.

WYMAN.

DOCTOR NOLTE TO REMAIN AT SAN ANTONIO.

NEW ORLEANS, LA., September 27, 1903.

WYMAN, Washington:

Thanks for telegram. Told Wertenbaker. Have wired Nolte to stay. Nothing new.

EDMOND SOUCHON.

WASHINGTON, September 28, 1903.

Dr. EDMUND SOUCHON,

New Orleans, La.:

Thanks for leaving Nolte at San Antonio. Please wire me any information you receive from him and whether any persons are arriving from Laredo.

WYMAN.

PYRETHRUM POWDER FOR USE AT LAREDO.

SEPTEMBER 28, 1903.

WERTENBAKER,

Marine Hospital, New Orleans, La.:

Your action in sending 500 pounds pyrethrum, Guiteras, approved. Any requests after to-day notify Bureau.

WYMAN.

NO DISINFECTION OF MAIL AT PRESENT.

EL PASO, TEX., September 28, 1903.

WYMAN, Washington:

Should mail arriving at El Paso from infected points be fumigated; and by whom? Please wire.

ALEXANDER.

[Reply.]

WASHINGTON, September 28, 1903.

ALEXANDER, El Paso, Tex.:

No disinfection of mail at present.

WYMAN.

REQUISITIONS FOR PYRETHRUM—NOMINATIONS.

SEPTEMBER 28, 1903.

GUITERAS, Laredo, Tex.:

Referring to your telegram, September 26, asking authority to order material if necessary direct from Wertenbaker, better make your requisitions direct to Bureau. Have approved your requisition on Wertenbaker for 500 pounds pyrethrum. Have forwarded for approval your nominations of acting assistant surgeons, clerk, and laborers. Will wire as to disbursing officer to-morrow. Murray en route.

WYMAN.

WASHINGTON, September 27, 1903.

Acting Assistant Surgeon COMBE, Brownsville, Tex.:

Protection of United States cities against Laredo has been provided by measures at Laredo, including train-inspection service. Half dozen Service officers are there, with Surgeon Murray as expert and Surgeon Guiteras in charge of protective measures. Bureau can not authorize guards at towns and cities as a cordon against Laredo. The guards previously authorized to be appointed by you were to protect against Mexico. Situation well in hand at Laredo. Can not grant 20 guards requested in your telegram of 26th.

WYMAN.

WASHINGTON, September 28, 1903.

GUITERAS, Laredo, Tex.:

Referring to your telegram 28th, authorized to loan Tabor camp outfit for 25 persons. Wire if sufficient camp outfit in Laredo now for this purpose.

WYMAN.

NASHVILLE, TENN., September 27, 1903.

WYMAN, Washington:

Please furnish this board and Dr. Heber Jones, vice-president at Memphis, with information concerning yellow fever situation. Such information from you to this board will be treated as confidential.

J. A. ALBRIGHT, Secretary.

WASHINGTON, September 28, 1903.

Dr. J. A. ALBRIGHT, Nashville, Tenn.:

Three deaths from yellow fever at Laredo, Tex., in last week. State Health Officer Tabor there and half dozen Service officers. Laredo quarantined. Active measures being taken to suppress disease and prevent spread. Please forward information to Dr. Heber Jones.

WYMAN.

HOUSE DISINFECTION.

LAREDO, TEX., September 28, 1903.

WYMAN, Washington:

Ten houses and 34 rooms disinfected yesterday. Diagnosis in 2 suspicious cases confirmed to-day; 6 suspects reported; no deaths. Seventeen houses disinfected, with 84 rooms, since 25th instant. There have been 3 deaths and 13 positive cases; 7 suspects are now under observation.

GUITERAS.

TRAIN INSPECTION PROPOSED.

WASHINGTON, September 28, 1903.

GUITERAS, Laredo, Tex.:

Referring to your telegram of 26th, outlining plan of campaign, train-inspection service considered by Bureau very necessary, and suggest Frick for super-

vising same. Four men were authorized and are under pay for this purpose. This is deemed essential even with trains going north. At same time do not oppose, for present at least, State quarantine against Laredo, even if considered too excessive.

WYMAN.

TRAIN INSPECTION NOT REQUIRED.

LAREDO, TEX., *September 28, 1903.*

WYMAN, *Washington:*

Referring to your telegram of 28th referring to train inspection, Murray, Tabor, and myself are of the opinion that the circumstances do not require it. If Bureau still considers it necessary, wire so that I may establish it at once. The four acting assistants are each in charge of a section of mosquito brigades; quarantine restrictions against Laredo are excessive.

GUITERAS.

ARRIVAL OF SURGEON MURRAY.

LAREDO, TEX., *September 28, 1903.*

WYMAN, *Washington:*

Arrived 4 afternoon, 28th.

MURRAY, *Surgeon.*

HOUSE DISINFECTION—CAMP OUTFIT AT CACTUS.

SEPTEMBER 29, 1903.

SOUCHON, *New Orleans, La.:*

Murray arrived Laredo yesterday. Guiteras wires 17 houses, 84 rooms disinfected. Habana method used since 25th. Have camp outfit for 100 at Cactus. Service has 11 medical inspectors in Laredo. Am sending Purnell to inspect territory around Laredo. Acting Assistant Surgeon Burke, in response to inquiry, wires no dengue in Nueces County as rumored.

WYMAN.

WASHINGTON, *September 29, 1903.*

GUITERAS, *Laredo, Tex.:*

If there is passenger traffic out of Laredo, it should be under medical supervision; this means train-inspection service.

WYMAN.

WASHINGTON, *September 30, 1903.*

SOUCHON, *New Orleans, La.:*

Guiteras wires absolutely no passenger traffic out of Laredo. Thirteen cases reported for twenty-four hours ending last night. No new deaths. Have been but 3 deaths altogether. Purnell left here last night for San Antonio. He will confer with Nolte and then inspect surrounding country. Have sent Assistant Surgeon Ebersole from Ship Island to Houston. House-to-house inspection under way at Laredo.

WYMAN.

INSPECTION SERVICE, MEXICAN BORDER—PRECAUTIONS AGAINST YELLOW FEVER AT EAGLE PASS.

EAGLE PASS, TEX., *September 30, 1903.*

SIR: I have the honor to inform you that this county and State are becoming much exercised over the yellow-fever situation in Mexico.

The county officials requested the State to have all mail from Mexico fumigated before allowing same to enter the State. The State quarantine officer

here was ordered by the State health officer, Doctor Tabor, to disinfect all mail. * * *

The whole of the quarantine work here practically devolves upon the Service, and I am on the go at all hours, answering questions and allaying fear.

A quarantine is to be established at Reata, Mexico, by the State of Coahuila (Mexico) against Monterey. This will be accomplished in a few days.

The Federal (Mexican) health officer at Ciudad Porfirio Diaz, Mexico, is boarding all trains coming into Diaz and inspecting same for suspicious cases, also taking note of persons arriving from infected localities, and giving me all of the information which he secures, thus making the quarantine here practically impossible to pass.

I also have a guard in Mexico to meet the incoming trains, who takes note of all persons arriving in Diaz. This guard then crosses the river to this side, reports what he has learned, and what the Mexican health officer (Doctor Carter) has to say.

In other words, all persons arriving in Diaz are spotted. I get their descriptions and turn them over to the guards on the bridges. Besides this, I know of every ticket sold at Monterey and other points on the Mexican International Railroad.

I am free to state that I think it impossible for anyone to get here without my knowledge.

Respectfully,

LEA HUME.

Acting Assistant Surgeon in Charge.

The SURGEON-GENERAL.

CONDITIONS AT LAREDO AND MEASURES FOR PREVENTING INTRODUCTION INTO AND SPREAD OF YELLOW FEVER IN TEXAS.

QUARANTINE AT MATAMORAS EFFECTIVE—QUARANTINE AT BROWNSVILLE ADVISED.

[Telegrams.]

BROWNSVILLE, TEX., *September 29, 1903.*

FRANCIS B. LOOMIS,

Assistant Secretary of State, Washington:

Have inspected Mexican quarantine, this district. Matamoros well protected by civil and military authorities. Brownsville should establish immediate and rigid quarantine against Laredo, Tex. City and county funds insufficient. Citizens earnestly request that I advise Department they will appreciate all Federal aid possible.

P. MERRILL GRIFFITH,

United States Consul at Matamoros.

DOCTORS NOLTE AND PURNELL AT SAN ANTONIO.

WASHINGTON, *September 30, 1903.*

GUITERAS, *Laredo, Tex.:*

Inform Tabor as follows: "Souchon informs me he has Nolte at San Antonio to keep him posted, and that Nolte is in touch with local health authorities." Purnell, an immune, has been sent by me to San Antonio and then will proceed on line of railroad from San Antonio to Cactus to keep informed as to situation. The effect will be to stop rumors, as Purnell is expert. Have also sent Ebersole to Houston to be available for duty anywhere.

WYMAN.

PHARMACIST GOODMAN APPOINTED DISBURSING AGENT.

WASHINGTON, *October 1, 1903.*

GUITERAS, *Laredo, Tex.:*

Pharmacist Goodman has been appointed disbursing agent and will leave with funds to-morrow.

WYMAN.

PASSED ASSISTANT SURGEON WERTENBAKER ORDERED TO BEAUMONT, TEX.

WASHINGTON, October 2, 1903.

WERTENBAKER, *New Orleans, La.*:

See telegram to Lumsden. Proceed with him to Beaumont. After installing him and observing matters yourself for a day or two at Beaumont proceed to Houston, where same orders have been sent Ebersole. After a day or two in Houston wire. Bureau expects then to order you back to New Orleans, but await orders before leaving. Wire situation on leaving Beaumont; also on leaving Houston.

WYMAN.

PASSED ASSISTANT SURGEON LUMSDEN ORDERED TO BEAUMONT.

WASHINGTON, October 2, 1903.

LUMSDEN, *New Orleans, La.*:

Proceed to Beaumont, Tex.; confer with local health authorities; advise their looking out for any refugees from Laredo and keeping them under observation. Wire report as to general conditions, and advise with Wertenbaker, who will go with you and will remain a day or two. Wire Bureau at least every other day.

WYMAN.

YELLOW FEVER AT MINERA.

LAREDO, TEX., October 2, 1903.

WYMAN, *Washington*:

Forenoon visited Minera, a mining camp 26 miles northwest, with Tabor. Found 7 yellow-fever convalescents; 1 death, with all signs. On 30th, afternoon, visited many sick people; confirmed 4 cases, ruled out 2, 1 doubtful.

MURRAY, *Surgeon*.

CAMP AT SANCHEZ STARTED.

WASHINGTON, October 2, 1903.

GUITERAS, *Laredo, Tex.*:

Is Tabor conducting camp at Sanchez? If so, did he take tents and equipment from Laredo or from camp outfit now at Cactus? Purnell now in San Antonio examining territory between there and Cactus.

WYMAN.

LAREDO, TEX., October 2, 1903.

WYMAN, *Washington*:

Tabor started camp at Sanchez yesterday, taking about one-third of our camp outfit, which is now at Sanchez and not at Cactus.

GUITERAS.

CERTIFICATES TO PASSENGERS BOUND FOR UNITED STATES.

WASHINGTON, October 2, 1903.

GUITERAS, *Laredo, Tex.*:

Replying to your telegram September 29, can you spare Von Ezdorf to visit San Luis Potosi and Saltillo to confer with United States consuls and ascertain if any reliable system can be established for giving certificates to passengers bound for the United States that they have not been in infected districts? Regulations already require that passengers arriving at all border inspection stations must give proof of absence from infected districts or be detained. Answer and await orders to send.

WYMAN.

LAREDO, TEX., October 2, 1903.

WYMAN, *Washington*:

Impossible to spare Von Ezdorf at present without upsetting our system of disinfection. No reliable system can be established for giving certificates to passengers bound for United States unless they are issued by reliable men. The men who issue these certificates must be reliable, and must satisfy themselves that the passengers have not been in any infected district during the five previous days.

GUITERAS.

PROPOSAL TO STOP THROUGH PASSENGER TRAFFIC FROM MONTEREY.

LAREDO TEX., October 2, 1903.

WYMAN, *Washington*:

Tabor proposes to stop all through passenger traffic from Monterey through Laredo unless detained in detention camp for ten days. This measure, while severe, will not work much hardship in so far as Laredo is concerned, inasmuch as passengers from Monterey and points south of it can come through Eagle Pass or El Paso. This will do away with necessity for medical inspection recommended in my wire of September 20.

GUITERAS.

SIX NEW CASES, ONE DEATH, YELLOW FEVER AT LAREDO—EPIDEMIC SPREADING IN NUEVO LAREDO.

LAREDO, TEX., October 3, 1903.

WYMAN, *Washington*:

To-day's report. Six new cases with 1 death; suspicious cases, none; previously reported, 45; total cases to date, 51; total (deaths), 3. Six houses disinfected to-day, with 62 rooms. Will put on two additional mosquito sections to-morrow morning. The situation is about the same. Murray and I believe there is still some hope of controlling the epidemic. The next few days will tell. In twenty-four hours ending to-day at 10 a. m. 6 deaths were reported in Nuevo Laredo. This indicates that the epidemic there is widespread. On the 30th ultimo Doctor Trevino, Vera Cruz, expected on duty at Nuevo Laredo, reported to Murray 300 cases positive plasmodial and 12 total yellow fever, with 9 deaths.

GUITERAS.

INSPECTION OF REFUGEES FROM LAREDO.

WASHINGTON, October 2, 1903.

PURNELL, *St. James Hotel, San Antonio, Tex.*:

Wire Bureau whether local authorities are paying attention to refugees who left Laredo on or after September 15, and whether Nolte is looking after same matter. How far down does railroad run from Laredo and return? Wish all information possible from San Antonio, after wiring which proceed in accordance with letter of instructions. Suggest inspection of each principal station from San Antonio to Laredo, and wire from each place you stop on this route, if reason therefor.

WYMAN.

MEETING OF SAN ANTONIO BOARD OF HEALTH—QUARANTINE OF SMALL TOWNS.

SAN ANTONIO, TEX., October 3, 1903.

WYMAN, *Washington*:

Attended meeting board of health. Business men and railroad officials working harmoniously. Proper attention given refugees. Trains run to Encinal, where crews change. Small towns on road strictly quarantined. San Antonio's

quarantine sensible. Sufficiently alert. Nothing suspicious. Nolte has been looking after same matter, but leaves to-night. Will make inspection first possible moment. Telephone communication with surrounding towns extensive. No rumors.

PURNELL.

CONFERENCE WITH COUNTY HEALTH OFFICER, LASALLE COUNTY.

COTULLA, TEX., October 4, 1903.

WYMAN, *Washington*:

Had conference with health officer of county. Found everything clean. Quarantine measures effective.

PURNELL.

NOTHING SUSPICIOUS AT SAN ANTONIO.

WASHINGTON, October 5, 1903.

EBERSOLE, *Rice Hotel, Houston, Tex.*:

Nolte and Purnell report nothing suspicious at San Antonio. Wire result of your conference with local authorities.

WYMAN.

PASSED ASSISTANT SURGEON WERTENBAKER ORDERED TO EL PASO.

WASHINGTON, October 5, 1903.

WERTENBAKER, *Oaks's Hotel, Beaumont, Tex.*:

After completion of duty in Houston, proceed to El Paso. Confer with Alexander. Make thorough inspection and report. Investigate evidence accepted for passenger traffic from noninfected places in Mexico. Wire departure and arrival.

WYMAN.

PASSED ASSISTANT SURGEON LUMSDEN ORDERED TO EAGLE PASS.

WASHINGTON, October 5, 1903.

LUMSDEN, *Oaks's Hotel, Beaumont, Tex.*:

If sanitary conditions in Beaumont are satisfactory, proceed immediately to Eagle Pass. Confer with Hume. Make thorough inspection. Report what evidence is accepted that passenger traffic is not from infected places in Mexico. Wire departure and arrival.

WYMAN.

INFORMATION RECEIVED AT SAN ANTONIO FAVORABLE.

SAN ANTONIO, TEX., October 5, 1903.

WYMAN, *Washington*:

All information favorable and precautionary measures satisfactory. Mail report to-night.

PURNELL.

NO NECESSITY FOR QUARANTINE AGAINST COTULLA.

COTULLA, TEX., October 5, 1903.

WYMAN, *Washington*:

Points between here and San Antonio quarantined against this place without cause. I return to San Antonio in few minutes. All quiet.

PURNELL.

TWENTY-TWO CASES AT LAREDO—YELLOW FEVER REPORTED AT COLUMBIA.

LAREDO, TEX., October 5, 1903.

WYMAN, Washington:

Twenty-two cases reported to-day; no deaths. Seventeen houses disinfected, with 95 rooms. No new cases at Minera. Rumor of 5 cases at Columbia, opposite Minera, on American side. Nuevo Laredo reports 1 death. Fifteen cases under treatment and 3 suspicious. To-day's report for Laredo is discounted, but it is evident that there are cases resulting from mosquitoes infected prior to beginning our disinfection work. The epidemic is so widely disseminated that good results are doubtful, but still have some hope. Doctor Lowry, railroad surgeon, reports 11 new cases in Nuevo Laredo, these not having been reported by the authorities.

GUITERAS.

TOTAL CASES OF YELLOW FEVER AT LAREDO TO DATE.

LAREDO, TEX., October 6, 1903.

WYMAN, Washington:

New cases reported to-day, 19; deaths, none; cases previously reported, 83; total to date, 102; total deaths, 5. Twenty houses disinfected, with 93 rooms. From Minera 1 death reported and no new cases.

GUITERAS.

REPORT OF YELLOW FEVER AT CORPUS CHRISTI.

LAREDO, TEX., October 6, 1903.

WYMAN, Washington:

Persistent rumors yellow fever Corpus Christi. Suspicious detained to-day. Arrangements being made for Tabor and Murray to go to-night to investigate again.

GUITERAS.

PASSED ASSISTANT SURGEON WERTENBAKER REPORTS CONDITIONS AT BEAUMONT SATISFACTORY—ORDERS TO EL PASO RECEIVED.

BEAUMONT, TEX., October 6, 1903.

WYMAN, Washington:

Conditions here apparently satisfactory. *Stegomyia* abundant. Orders to El Paso received this a. m. Leaving for Houston. Address Capital Hotel.

WERTENBAKER.

ARRIVAL OF PASSED ASSISTANT SURGEON WERTENBAKER AT HOUSTON.

HOUSTON, TEX., October 6, 1903.

WYMAN, Washington:

Arrived at midnight. Have had conference with Ebersole and city health officials. Conditions here appear satisfactory. Have had conference to-day with southern health officials. They are willing to cooperate with any arrangements we may make regarding passenger traffic across the border. Leave at midnight for El Paso. No news here beyond press dispatches.

WERTENBAKER.

PASSED ASSISTANT SURGEON LUMSDEN LEAVES FOR EAGLE PASS.

BEAUMONT, TEX., October 6, 1903.

WYMAN, Washington:

Orders received. Will depart for Eagle Pass to-morrow morning.

LUMSDEN.

DEPARTURE OF STATE HEALTH OFFICER TABOR AND SURGEON MURRAY FOR CORPUS CHRISTI.

LAREDO, TEX., October 7, 1903.

WYMAN, *Washington*:

Tabor and Murray left for Corpus Christi at 1 this morning.

GUITERAS.

REPORT FROM CORPUS CHRISTI.

LAREDO, TEX., October 8, 1903.

WYMAN, *Washington*:

Visited Corpus Christi with Tabor; made necropsy; malarial; no cases of fever in town according to statements of the four doctors.

MURRAY, *Surgeon*.

REPORT OF CONDITIONS EXISTING IN SAN ANTONIO, TEX., AND VICINITY WITH RELATION TO PREVENTING SPREAD OF YELLOW FEVER.

SAN ANTONIO, TEX., October 5, 1903.

SIR: I have the honor to submit a report of the conditions existing in and south of San Antonio, and of the work done up to the present time.

San Antonio was reached on the morning of October 2, 1903, and as soon as practicable I visited the local health authorities, and Doctor Nolte, of the Louisiana State board of health, that I might acquaint myself with the situation as regards yellow fever and quarantines.

From the health authorities I learned that as soon as the first cases of fever had been announced in Laredo a quarantine was put on against passengers and baggage coming from that point, and officers met the incoming train and prevented passengers disembarking. Measures were also taken to prevent those who had gone north from coming back to the city until five days had expired since leaving the fever district, and as far as possible those who had come into the city were located and kept under observation. Besides quarantining Laredo, a quarantine was declared against those counties which had failed to close their doors against the infected center.

All counties are now quarantined. From a sanitary point of view San Antonio presents a better condition than most places of its size, and measures for its improvement are being prosecuted. The local board of health is composed of four physicians and the mayor ex officio. The physicians are Dr. D. Berry, president and county physician; Dr. S. Burg, city physician; Dr. E. F. Hertz Berg, and Dr. H. D. Barnitz, all intelligent, alert, and active gentlemen. They met me very courteously and promised to give all aid in their power, and have extended an invitation to me to be present at their meetings and to take part in them.

From Doctor Nolte I learned that there had been a few rumors relative to there being yellow fever in the city, but upon investigation it was found that they were without foundation. He further stated that he had attended a meeting of the local medical society on the evening of October 1, at which there were present 50 practitioners of the city, and upon inquiry it was established that none of them had seen any case that was at all suspicious. Up to the present time I am satisfied there has been no case of fever as far as is known outside of Laredo and the mines, the latter having had constant and intimate association with Laredo.

On October 3 I drove with Doctor Burg, the city physician, over the city, and, among other places, visited the city hospital. This institution accommodates about 60 beds, but at present there are only about 30 patients in its wards, and among these there were only 3 fever cases, and these plainly malarial. A room has been prepared here for the reception of actual or suspected yellow-fever cases. The windows and doors are protected by mosquito netting, and a low ceiling has been put in of the same material.

To revert a moment. On Friday evening I attended a meeting of the board of health, a copy of the proceedings of which was mailed the Department on Saturday last. Sunday, October 4, I took the 9 o'clock train (only one train each way daily) and went to Cotulla, the first place of importance after leaving

Laredo coming north. Before reaching this place I had an opportunity for gaining a few items concerning Pearsall, the only other point of any importance on the International Great Northern Railroad between San Antonio and Laredo, the train having stopped there for half an hour awaiting the north bound. Inquiries made of the merchants elicited the fact that there was no sickness, and that no strangers were allowed within their gates. On reaching Cotulla the health officer, Dr. J. M. Williams, of Lasalle County, of which Cotulla is the county seat, was called on, and from him a correct understanding of the quarantine measures was obtained.

At Cotulla the Nueces River passes, dividing Lasalle County into two, running in a southeasterly direction, and there are only three places at which people can cross when it is swollen, as is now the case, without swimming. There are two bridges for the public roads and one railroad bridge. At each of these crossings guards are placed, and no one is permitted to pass unless he can establish the fact that he has not been in the yellow-fever neighborhood. It is possible for one to get across the river by swimming, but very few would ever attempt it, and before they could reach their destination, dodging through the thick undergrowth, the five days would elapse and the danger would have passed. In the lower part of the county the little hamlet of Encinal is located. This is under Doctor Williams's jurisdiction.

There are two dirt roads entering the county here, both of which are strongly guarded. All of the contiguous counties have adopted the same measures that Lasalle has. Along the line of the International Great Northern road are a number of little hamlets, the best of which being a very small affair, peopled mostly—say fully two-thirds—by Mexicans. Each place has established its own quarantine and positively refuses to permit anyone from the south to come in. No one comes in unless he bears the inevitable health certificate. A great number of the Americans left these towns for their ranches when the fever was first announced. In Cotulla, for instance, fully two-thirds of the white population either took the train for the north or went to the ranches.

On October 5 (this morning), not being able to enter any of the towns between Cotulla and this place, coming from the south, I returned to San Antonio, which is really the key to the situation. If no fever gets here, then there is no danger to the country north or east, providing, of course, that none has been already carried by the exodus from Laredo.

The country south is one of magnificent distances, the ranches being from 5 to 30 miles apart, and each one is a principality unto itself, with its own little shotgun quarantine. There is, of course, a little danger of the disease getting on some of the large ranches near Laredo, from the fact that quite a number of Mexicans come north at this season to pick cotton and some one might slip on a ranch and be hidden by his friends.

I reached San Antonio this afternoon and called on Doctor Berry, the president of the board of health. He reports everything quiet and no rumors of any kind.

Respectfully,

The SURGEON-GENERAL.

JOHN H. PURNELL,
Acting Assistant Surgeon.

[Telegrams.]

EL PASO, TEX., October 8, 1903.

WYMAN, Washington:

See my report this station last March for general conditions. Consular certificates and personal statements of passengers being accepted as to previous movements. * * * Recommend authority to nominate acting assistant to help Alexander and make careful inspection on train before reaching Juarez. Think no trouble to arrange such inspection. * * *

WERTENBAKER.

LAREDO, TEX., October 8, 1903.

WYMAN, Washington:

At Tabor's request have lent him additional camp outfit. A small camp is to be established on Texas-Mexican road.

GUITERLS.

LAREDO, TEX., *October 8, 1903.*WYMAN, *Washington:*

New cases reported to-day, 25; deaths, 1; houses disinfected, 19, with 72 rooms. The situation is discouraging. Circumstances are such that it is impossible to make mosquito disinfection effective. Am pushing it, however, giving particular attention to oiling stagnant water in infected districts.

GUITERAS.

WASHINGTON, *October 9, 1903.*GUITERAS, *Laredo, Tex.:*

In spite of discouraging situation due to prevalence of fever before you took hold, Bureau approves your determination to continue in present efforts. Am informed that in eliminating yellow fever from Habana not only patients and suspects were screened, but general encouragement was given to citizens to protect themselves by netting. You must not expect results too soon.

WYMAN.

WASHINGTON, *October 10, 1903.*GUITERAS, *Laredo, Tex.:*

If possible make arrangements for daily report of cases and deaths at Nuevo Laredo, Mexico, to be wired here.

WYMAN.

EAGLE PASS, TEX., *October 8, 1903.*WYMAN, *Washington:*

Evidence accepted here by Service and State representative that passenger traffic is not from infected places in Mexico comprises statement under oath by passenger, corroborated by examination of railroad ticket, marks on baggage, and report of railroad officials. Reata, on Mexican International Railroad, in Coahuila State, is key to passenger traffic to Eagle Pass from infected localities in Mexico. Mexican quarantine authorities have established detention camp there. Will report as observations are completed. Address me care Hume.

LUMSDEN.

EAGLE PASS, TEX., *October 12, 1903.*WYMAN, *Washington:*

Made practically house-to-house inspection Quemado; found 8 cases undoubted malaria; no indications yellow fever. River there now high, consequently very few attempt crossing from Mexico. Consider my remaining longer at Eagle Pass unnecessary. Hume is handling situation well.

LUMSDEN.

WASHINGTON, *October 13, 1903.*LUMSDEN, care HUME, *Eagle Pass, Tex.:*

Proceed immediately to El Paso and assume temporary charge of station. Alexander directed to report to you. Wertenbaker will remain a day or so to post you on situation.

WYMAN.

INSPECTION SERVICE, MEXICAN BORDER—YELLOW FEVER AT LAREDO AND OTHER POINTS IN TEXAS AND MEXICO.

LAREDO, TEX., *October 15, 1903.*WYMAN, *Washington:*

New cases to-day, 27; deaths, 1; houses disinfected, 22, with 85 rooms; 242 containers, 40 premises and 2,000 square feet standing water oiled; 33 spigots put in water barrels; 114 premises, covering 16 city blocks, inspected. Maxi-

imum temperature, 94°; minimum, 70°. Nuevo Laredo reports 6 new cases; no deaths. No report obtainable from Minerva.

GUITERAS.

WASHINGTON, October 17, 1903.

GUITERAS, Laredo, Tex.:

E. H. R. Green wires request from Dallas, Tex., that disinfecting squad be sent from Laredo to Minera for purpose screening and fumigating; that conditions among miners there becoming serious. Confer with Tabor concerning disinfection Minera.

WYMAN.

LAREDO, TEX., October 17, 1903.

WYMAN, Washington:

Have already arranged with Tabor to send Diuiddie with Thompson, of Tabor's medical staff, to Minera Monday morning for screening and disinfecting.

GUITERAS.

LAREDO, TEX., October 17, 1903.

WYMAN, Washington:

New cases to-day, 22; deaths, 3; 22 houses disinfected, with 75 rooms; 393 containers oiled, 51 premises and 15 excavations sprinkled, 6 barrels of crude oil sprinkled in open lots and streets, 203 premises inspected, covering 35 city blocks. Maximum temperature, 83°; minimum, 44°. New Laredo reports 3 new cases and 1 death. Minera, up to yesterday, reports a total of 90 cases and 5 deaths. I look for a marked diminution in the number of cases in the next few days as a result of the work being done and the favorable weather.

GUITERAS.

[Telegrams.]

EL PASO, TEX., October 18, 1903.

WYMAN, Washington:

Have tightened inspection here; all passengers from Mexico now required to make affidavit they are not from infected districts. State quarantine officer here informs me officially that persons five days from yellow-fever districts can be admitted without further detention. Am cooperating with him. Everything going smoothly.

LUMSDEN.

LAREDO, TEX., October 18, 1903.

WYMAN, Washington:

13th, visit many and confirm 7; 14th, confirm 15 (also), with Consul Garrett; 15th, 16th, 17th, and 18th, make some visits in Laredo. Consul Garrett will recover. Have spent five nights and four days with him. Subject of future letter.

MURRAY.

LAREDO, TEX., October 18, 1903.

WYMAN, Washington:

New cases to-day, 20, deaths 6; houses disinfected 11, with 55 rooms; 160 containers oiled, 42 premises sprinkled, and 18 faucets put in water barrels; spigots or faucets are put in all barrels that are covered with oil; 82 premises inspected, 7 barrels of crude oil sprinkled on vacant lot and intervening streets. Maximum temperature, 80°; minimum, 48°. No report from New Laredo. Pharmacist Goodman leaves for Minera to-morrow morning with disinfecting gang.

GUITERAS.

LAREDO, TEX., October 19, 1903.

WYMAN, Washington:

Tabor requests immediate presence of Murray in San Antonio. Murray leaves to-morrow morning. Reports received here state 2 cases yellow fever at that place.

GUITERAS.

LAREDO, TEX., October 19, 1903.

WYMAN, Washington:

Tabor reports as follows: Hondo case positive; isolated; no *Stegomyia* in neighborhood; origin being investigated.

GUITERAS.

LAREDO, TEX., October 19, 1903.

WYMAN, Washington:

Worked in Laredo all day. Will be in San Antonio at noon 20th in response to Tabor's request to Guiteras.

MURRAY.

LAREDO, TEX., October 19, 1903.

WYMAN, Washington:

New cases to-day 36, deaths 5; houses disinfected 16, with 54 rooms; 136 containers and 2 excavations oiled, 70 premises sprinkled, 102 premises inspected covering 20 city blocks, 12 faucets applied, 15 barrels of crude oil sprinkled on 40 blocks of vacant lots and intervening streets. Maximum temperature 83°, minimum 41°. One case and 1 death supposed to be from yellow fever at Cannel, a mining camp 2½ miles this side of Minera. Will investigate to-morrow.

GUITERAS.

EL PASO, TEX., October 20, 1903.

WYMAN, Washington:

Far as ascertainable, no travel recently through here from infected district. Inspection work going smoothly.

LUMSDEN.

HOUSTON, TEX., October 20, 1903.

WYMAN, Washington:

Local conditions remain good.

EBERSOLE.

LAREDO, TEX., October 20, 1903.

WYMAN, Washington:

New cases reported to-day, 36; deaths, 2. Investigation shows that only 13 of the new cases can be credited to the last twenty-four hours; the balance are old cases discovered to-day. Houses disinfected, 13, with 51 rooms; 244 containers and 1 excavation oiled; 67 premises sprinkled, covering 19 city blocks; 29 spigots put in barrels; 15 barrels of crude oil sprinkled on vacant lots and intervening streets, covering 15 blocks; maximum temperature, 80°; minimum, 47°. New Laredo reports 8 new cases and 1 death for yesterday and 4 new cases and 4 deaths to-day. Inspected Cannel and Minera, and found 1 case at Cannel, of uncertain origin; proper precautions taken. Cannel is a mining camp 3 miles this side of Minera; population about 1,000. Minera has had 96 cases with 7 deaths. There are about 40 cases now under treatment. Goodman is rapidly pushing disinfection of Minera. No train arrived to-day from San Antonio. Have heard nothing new from there.

GUITERAS.

EAGLE PASS, TEX., October 21, 1903.

WYMAN, Washington:

County authorities, Mexican health officer at C. P. Diaz, and at mass meeting citizens here to-night all request Service, through me, to take in full charge

and enforce rigid quarantine against San Antonio, holding all individuals from there five days. This will entail considerable expense. Will need more tents and 15 more guards, besides cook and matron. Fair now going on in San Antonio. At least 150 persons will arrive on train to-morrow. Service should handle the quarantine. Advise at once Bureau desires. Cold weather already here, and quarantine will not last long.

HUME.

EAGLE PASS, TEX., October 21, 1903.

WYMAN, Washington:

Maverick County quarantined against San Antonio account 3 deaths yellow fever to-day. County authorities request service and desire use of camp for detention of passengers. Wire if I shall cooperate with county.

HUME.

WASHINGTON, October 22, 1903.

HUME, Eagle Pass, Tex.:

Telegram 21st received this morning. Bureau can not undertake preventive measures at noninfected cities and towns, its operations being at seat of infection and border. You are authorized, however, to cooperate with local or county authorities in their protective measures against Texas points with such materials and force, including mosquito netting, as you have on hand. Same action was taken at Corpus Christi and Brownsville.

WYMAN.

SAN ANTONIO, TEX., October 21, 1903.

WYMAN, Washington:

Arrived 20th, examined 13 sick. Confirmed Tabor's Academy case; decided 2 others; ruled out 7; 3 doubtful. Have had a consultation of physicians with following result: Yellow fever. Wednesday held 3 necropsies. Two positive, 1 spoiled by embalmer, but presume will have consultation of physicians this afternoon. Do not think there will be any further spread. Disinfection mails unnecessary. A frost is reported to have occurred at Palestine last night. Assured public that everything possible is being done and will be kept fully advised. Am subject to Tabor's directions, and wish to return Laredo.

MURRAY, Surgeon.

WASHINGTON, October 21, 1903.

SOUCHON, New Orleans, La.:

Murray at San Antonio confirms 3 cases. States he does not think there will be further spread, probably account frost Palestine.

WYMAN.

Washington, October 21, 1903.

MURRAY, San Antonio, Tex.:

Wire what measures are being taken to prevent spread.

WYMAN.

SAN ANTONIO, TEX., October 21, 1903.

WYMAN, Washington:

Your telegram of 21st received. Medical society, 60 members, met and indorsed diagnosis and proffered support. Listened to addresses by Tabor and Murray; promised to screen all fever patients promptly, as ordered by city board. To-day 1 new case reported, not yet acted on. Medical inspectors are acting in the suspected districts. Visitors at international fair to go home and be subject to six days' observation if home towns will admit them. While there is reason to believe yellow fever has existed for a month, the profession and authorities are impressed with the importance of prompt action. Both city and county authorities assure all needed funds. * * *

MURRAY.

WASHINGTON, October 21, 1903.

MURRAY, *San Antonio, Tex.:*

Remain San Antonio until Richardson arrives. Will then wire you again. Wire daily until arrival of Richardson.

WYMAN.

WASHINGTON, October 21, 1903.

RICHARDSON, *New Orleans, La.:*

If Wertenbaker has returned, proceed immediately to San Antonio. Murray wires 3 cases, but does not fear spread. Report your address and wire all information soon as possible after arrival. Confer first thing with Doctor Tabor and local board.

WYMAN.

LAREDO, TEX., October 21, 1903.

WYMAN, *Washington:*

Thirteen cases reported to-day. Only 8 of these are new. Five are old cases just come to light. The situation is encouraging, although these hidden cases interfere with efficiency of our work. Deaths reported, 4. Twenty-eight houses disinfected, with 84 rooms. Two hundred and thirteen containers and excavations oiled. Forty premises sprinkled. One hundred and fifty premises inspected, covering 21 city blocks. Twenty-one barrels of crude oil sprinkled on vacant lots and intervening streets, covering 10 city blocks. Fifteen faucets put in water barrels. Maximum temperature, 83°; minimum, 47°. Minera reports 2 new cases and 1 death. Goodman returned to-night after completing disinfection of Minera—excellent work. No report from New Laredo. Murray reports 13 cases at San Antonio, and 2 positive autopsies and 1 presumable. Tabor reports 1 case at Castrovilla, originating in San Antonio.

GUITERAS.

TRANSACTIONS ON ACCOUNT OF YELLOW FEVER AT LAREDO AND SAN ANTONIO.

EL PASO, TEX., October 22, 1903.

WYMAN, *Washington:*

Indications are the local authorities will impose no restrictions on passenger traffic coming here from San Antonio, Tex., on ground this uninfected territory. The local board of health meets to-morrow to discuss question; otherwise nothing new here.

LUMSDEN.

EL PASO, TEX., October 23, 1903.

WYMAN, *Washington:*

At meeting this afternoon of local board of health and prominent citizens, resolutions adopted to invite people from San Antonio, Tex., to come here without restrictions. I consider this safe for El Paso, but there is some danger of refugees coming here and going to infected territory before incubation period is completed. Will suggest this unofficially to the local board of health. Local board of health accepts mosquito as sole agent, and members are much pleased to learn decision of Pasteur Institute Commission.

LUMSDEN.

WASHINGTON, October 24, 1903.

LUMSDEN, *El Paso, Tex.:*

Telegram received. Have any measures been set on foot by local board for screening febrile cases?

WYMAN.

EL PASO, TEX., October 25, 1903.

WYMAN, Washington:

Villas, president local board, informs me suspicious febrile cases occurring here will be thoroughly isolated and screened. No extraordinary precautions, as State is maintaining quarantine of San Antonio. Little travel from there here is anticipated, notwithstanding invitation referred to in my telegram of October 23.

LUMSDEN.

HOUSTON, TEX., October 22, 1903.

WYMAN, Washington:

Houston and Harris counties quarantined against San Antonio. Passenger traffic from that point suspended.

EBERSOLE.

WASHINGTON October 24, 1903.

EBERSOLE, Rice Hotel, Houston, Tex.:

Desired no tickets be sold for Louisiana without assurance that passengers from western Texas have not been within last five days in any place infected with yellow fever. Believe this can be arranged through railroad and ticket agents. Wire feasibility. Same will be done at Beaumont.

WYMAN.

NEW ORLEANS, LA., October 23, 1903.

WYMAN, Washington:

Will you not station officer at Houston and Beaumont to cooperate with Louisiana State board of health in seeing that passengers from western Texas swear that they have not been within the last five days in any place infected with yellow fever? * * * Can furnish two men if desired.

EDMOND SOUCHON.

WASHINGTON, October 24, 1903.

Dr. EDMOND SOUCHON,

New Orleans, La.:

Send name of physician and address for nomination for duty at Beaumont. Ebersole will do at Houston. I shall instruct that they operate at ticket offices or through ticket agents and demand satisfactory evidence of absence from yellow-fever district for five days and require affidavit. Richardson, San Antonio, wires to-day no tickets being sold to Texas or Louisiana points; trains pass through without stopping. Governor himself has quarantined entire State against San Antonio.

WYMAN.

WASHINGTON, October 26, 1903.

Dr. J. G. HENDERSON,

1100 Elysian Fields, New Orleans, La.:

Appointment as temporary acting assistant surgeon recommended. Proceed at once Beaumont; arrange with railroad and ticket agents so that no tickets be sold to points in Louisiana without their first being assured that passengers from western Texas have not been in the yellow-fever infected places within five days. Wire departure and arrival, giving address in Beaumont.

WYMAN.

NEW ORLEANS, LA., October 27, 1903.

WYMAN, Washington:

Leave to-night; agents Beaumont ordered to comply your telegram.

HENDERSON.

LAREDO AND MINERA.

WASHINGTON, October 22, 1903.

GUITERAS, Laredo, Tex.:

For your encouragement I send extract from letter from Geddings from Paris, received to-day: "Doctor Roux tells me Pasteur Institute Commission has absolutely settled upon the mosquito as the sole agent in the dissemination of yellow fever."

WYMAN.

LAREDO, TEX., October 22, 1903.

WYMAN, Washington:

New cases, 6; old cases discovered, 6; total to-day, 12; deaths, 1; houses disinfected, 31, with 141 rooms; 195 containers and 5 excavations oiled; 40 premises sprinkled; 123 premises inspected, covering 25 city blocks; 24 barrels crude oil sprinkled on vacant lots and intervening streets, covering 38 city blocks; 23 faucets applied. Maximum temperature, 85°; minimum, 55°. One new case and 1 death reported from Minera; no report from New Laredo. Arguëllas, governor of Tamaulipas, is now in New Laredo, directing efforts to stamp out epidemic; he called at this office; the visit was returned. Your telegram stating that the Pasteur Institute has accepted the mosquito as the sole means of transmitting yellow fever received; it will have a good effect.

GUITERAS.

LAREDO, TEX., October 23, 1903.

WYMAN, Washington:

Seven new cases to-day, 5 old cases discovered, making a total of 12 cases reported; 3 deaths; 32 houses disinfected, with 126 rooms; 99 containers and 5 excavations oiled; 105 premises inspected, 43 sprinkled; 15 faucets put in water barrels; 30 barrels of crude oil sprinkled on premises, vacant lots, and intervening streets, covering 61 city blocks. Maximum temperature, 81°; minimum, 59°. Minera reports 2 new cases; no deaths. The one case at Cannel died; no new cases. New Laredo reports 3 new cases and 2 deaths.

GUITERAS.

LAREDO, TEX., October 24, 1903.

WYMAN, Washington:

New cases, 7; old cases, 6; total reported to-day, 13; deaths, 1; 30 houses disinfected, with 101 rooms; 180 containers and 3 excavations oiled; 100 premises inspected and 60 sprinkled; 23 faucets put in water barrels; 20 barrels of crude oil sprinkled on vacant lots and intervening streets, covering 42 city blocks. Maximum temperature, 76°; minimum, 45°. No new cases at Minera nor Cannel. New Laredo reports 2 cases and 1 death. Murray arrived.

GUITERAS.

LAREDO, TEX., October 25, 1903.

WYMAN, Washington:

New cases to-day, 8; old cases, 4; total reported to-day, 12; 13 houses disinfected, with 42 rooms; 95 containers and 3 excavations oiled; 62 premises inspected and 36 sprinkled; 29 barrels of crude oil sprinkled on vacant lots and intervening streets, covering 34 city blocks; 16 faucets put in water barrels. Maximum temperature, 78°; minimum, 38°. New Laredo reports 1 new case and 2 deaths. No report from Minera or Cannel.

GUITERAS.

LAREDO, TEX., October 26, 1903.

WYMAN, Washington:

New cases, 2; old cases discovered, 6, making a total of 8 reported to-day; no deaths; 28 houses disinfected, with 106 rooms; 118 containers and 9 excavations oiled; 51 premises inspected and 97 sprinkled; 18 faucets put in water barrels. The oiling of the entire city was completed to-day. During

the progress of this work 3,425 water barrels were oiled. The work will be continued with the object of covering the city a second time. The disinfecting of empty houses and public buildings will now be undertaken. Maximum temperature, 80°; minimum, 48°. New Laredo reports 2 new cases and no deaths. No new cases at Minera and Cannel. The situation is very gratifying.

GUITERAS.

LAREDO, TEX., October 27, 1903.

WYMAN, Washington:

New cases, 8; old cases discovered, 15, making a total of 23 reported. Twelve houses disinfected, with 245 rooms. This includes the Hotel Hamilton. Two hundred and eighty-four containers, 56 excavations, and 94 premises oiled; 192 premises inspected; 23 faucets put in barrels; 61 barrels crude oil sprinkled on vacant lots and intervening streets, covering 70 city blocks. Maximum temperature, 77°; minimum, 47°. No cases at Minera or Cannel. Over six days have elapsed since the thorough disinfection of Minera by Goodman without new cases. The epidemic evidently stamped out. New Laredo reports 4 new cases and no deaths.

GUITERAS.

LAREDO, TEX., October 28, 1903.

WYMAN, Washington:

New cases, 6; old cases discovered, 9; total reported to-day, 15; deaths, 5; 27 houses disinfected, with 87 rooms; 127 containers and 51 excavations oiled; 67 premises sprinkled, 31 inspected; 14 faucets put in water barrels; 31 barrels of crude oil sprinkled on vacant lots and intervening streets. Maximum temperature, 81°; minimum, 57°. Heavy rain last night, covering large areas with water. Quarantine between the two Laredos raised to-day for immunes. No report from New Laredo or Minera. Cannel continues free from disease.

GUITERAS.

DISINFECTING METHODS USED IN FIGHTING YELLOW FEVER AT LAREDO.

LAREDO, TEX., October 23, 1903.

SIR: As directed in Bureau letter of October 17, I have the honor to make the following brief report upon the character and application of the disinfecting material, etc., used in screening houses in the suppression of the present epidemic of yellow fever.

The term "disinfecting material" includes everything utilized in the prevention of the spread of yellow fever, based upon a complete acceptance of the fact that the mosquito is the only means of transmitting the disease. It therefore includes disinfecting material, as usually understood, such as sulphur, pyrethrum, etc., and also lumber for screening purposes, mosquito and wire netting, oil, wooden faucets, etc.

The methods instituted are as follows: There are 3 screening and 5 disinfecting crews. When a suspicious or positive case of yellow fever is reported, a screening crew is at once sent to the house with a cart containing the necessary material, and the patient is immediately screened, the carpenters putting in ready-made screen doors or windows, or, when these are not available, making them on the spot. Where screening is impossible or impracticable, the patient is placed under a mosquito bar. The disinfecting crew follows immediately after the screening crew and disinfects that part of the house not occupied by the patient. On the conclusion of this disinfection the patient, if able to be moved, is transferred to one of the disinfected rooms and his room disinfected.

All water containers in a house are covered with oil, and faucets inserted in the barrels of drinking water.

Sulphur and pyrethrum are used in disinfection—the former where there is no danger of injury to the contents of the room, the latter where such injury may be apprehended. Where pyrethrum is used care is taken to sweep the room, so as to collect all the mosquitoes that may have been simply stunned by the fumes of the powder. In the disinfection large quantities of paper strips

are used in order to make the rooms air-tight. In some of the houses it is necessary to paper almost the entire building.

Respectfully submitted.

G. M. GUITERAS.

The SURGEON-GENERAL.

[Telegrams.]

WASHINGTON, October 22, 1903.

MURRAY, *San Antonio, Tex.:*

I quote from letter from Assistant Surgeon-General Geddings, received to-day from Paris: "Doctor Roux tells me Pasteur Institute Commission has absolutely settled upon the mosquito as a sole agent in the dissemination of yellow fever." Use this as you see fit.

WYMAN.

Similar message sent to Assistant Surgeon Lumsden, El Paso, and Assistant Surgeon Ebersole, Houston, Tex.

SAN ANTONIO, TEX., October 22, 1903.

WYMAN, *Washington:*

Your telegram 22d received; published to-morrow. Have seen 5—4 positive, 1 pneumonia. State quarantine proclaimed by Tabor in accedence to Texas counties and New Orleans for mails and freights. Boards are in earnest as to mosquito and prompt reports of cases. People left here will have to camp unless towns will admit them.

MURRAY.

SAN ANTONIO, TEX., October 23, 1903.

WYMAN, *Washington:*

One case in city, 1 in Fort Sam Houston; inspected all day with 9 doctors. Evidently some cases are not mentioned for fear of offending patrons. Large mass meeting this forenoon proffering aid, moral cause; in fact, to local boards it was a soul-stirring and confidence-inspiring affair. Murray must go to Laredo to treat Doctor Garrett and Doctor McGregor.

MURRAY.

SAN ANTONIO, TEX., October 24, 1903.

WYMAN, *Washington:*

Governor's proclamation of yesterday quarantines entire State against San Antonio. To date have been 9 cases reported with 3 deaths. There are undoubtedly unreported and unrecognized cases. One case at Fort Sam Houston declared yesterday. Local board has divided city into 31 sanitary districts and proposes to make daily house-to-house inspections, screening all febrile cases found. Disinfection mail, freight, and baggage leaving here required by governor's proclamation. No tickets being sold to Texas or Louisiana points. Trains pass through without stopping. *Stegomyia* apparently not plentiful. Much local interest in mosquito extermination. Weather quite cool.

RICHARDSON.

SAN ANTONIO, TEX., October 24, 1903.

WYMAN, *Washington:*

One case, 1 death reported to-day; minimum temperature last night, 46°; maximum yesterday, 74°. Cooler possibly. Frost predicted to-day.

RICHARDSON.

SAN ANTONIO, TEX., *October 25, 1903.*

WYMAN, Washington:

One case, no death official report to-day. Temperature last twenty-four hours, 76° maximum, 40° minimum. House-to-house inspection not yet in general operation. No frost last night.

RICHARDSON.

SAN ANTONIO, TEX., *October 26, 1903.*

WYMAN, Washington:

By request Doctor Tabor, I accompany him to Cuero, Tex., to-day to see suspected cases. Will return here to-night.

RICHARDSON.

SAN ANTONIO, TEX., *October 26, 1903.*

WYMAN, Washington, D. C.:

Returned from Cuero. Saw with Doctor Tabor 2 cases yellow fever in De Witt County, on ranch 11 miles north of Cuero. Held necropsy on third case at same house. Finding typical. Several *Stegomyia* seen in house. Infection probably through mild case from Laredo. Do not fear spread; 2 miles to nearest house.

RICHARDSON.

SUSPICIOUS CASES IN MEDINA COUNTY.

HOUSTON, TEX., *October 20, 1903.*

SIR: I have the honor to submit for consideration, with regard to the situation in San Antonio and Medina County, the following history of suspicious cases which have occurred there, the details being furnished by Health Officer Brumby, of this city, who was over the ground a few days since.

The first case, that of Mrs. —, a nurse, and mother-in-law of one Sylvester Rimero, was taken sick suddenly with fever at the house of Rimero. After the lapse of ten or twelve days the other inmates of the house were taken sick suddenly, first one Gonzales, then Rimero's wife, next his child, and lastly Rimero himself, all developing a fever in quick succession. All had similar symptoms, viz, high fever, subsiding in three or four days, and this followed by a secondary fever, or, as they say, a relapse.

Upon the third or fourth day of his illness the man Gonzales went to San Antonio by train and was admitted to hospital. He wrote to the other members of the household to come to the hospital. Rimero's wife died before receipt of Gonzales's letter, but Rimero started with his child in a wagon for San Antonio. The child died en route, but Rimero reached the hospital and was admitted in a delirious condition. I am informed by Doctor Brumby that he saw this man October 9, ten days after his admission to hospital, and that he noticed some bronzing of patient's skin with a yellowish tint of the conjunctivæ, but not knowing patient's previous history at that time did not investigate further. This patient was again seen by Doctor Brumby, I am informed, on the 14th instant, upon his return to San Antonio, at which time he elicited the above facts with regard to patient's history, and also found slight albuminuria upon examining patient's urine, and noticed some congestion of the conjunctivæ remaining.

From a search of the files of the local papers I found a reference in one of them to the admission of one Rimero to hospital on the 29th ultimo. From the history given, these patients lived about 18 or 20 miles from San Antonio, west, near the line of the Southern Pacific.

In view of the present reports from Hondo and San Antonio, I would respectfully submit the history of these cases for consideration, with due acknowledgment to Health Officer W. M. Brumby, of this city, for the main details of the cases which were furnished me upon his return to the city on the 18th instant.

Respectfully,

R. E. EBERSOLE, *Assistant Surgeon.*

The SURGEON-GENERAL.

EL PASO, TEX., *October 31, 1903.*WYMAN, *Washington:*

Tabor to-day wired Justice, State does not require fumigation Mexican Central trains here. Justice has communicated information to Mexican authorities, and fumigation probably will be discontinued to-morrow. Weather here cool; good frost last night.

LUMSDEN.

EL PASO, TEX., *November 1, 1903.*WYMAN, *Washington:*

Mexican superior board health has directed Samanigo to continue fumigation Mexican Central trains. Tabor wires Texas does not require it. Fumigation lasts few minutes only, therefore it does not interfere with our inspection of passengers.

LUMSDEN.

LAREDO.

LAREDO, TEX., *October 29, 1903.*WYMAN, *Washington:*

New cases, 6; old cases discovered, 1; total reported to-day, 7; deaths, 1; 27 houses disinfected, with 131 rooms; 256 containers and 13 excavations oiled; 69 premises inspected; 27 faucets put in water barrels; 32 barrels crude oil sprinkled on vacant lots and intervening streets, covering 55 city blocks; 25,000 square feet standing water oiled. Maximum temperature, 85°; minimum, 59°; weather close and sultry. Ten frontier guards in Zapata County discharged yesterday. New Laredo reported 3 new cases yesterday. No cases or deaths to-day. No report from Minera or Cannel.

GUITERAS.

LAREDO, TEX., *October 30, 1903.*WYMAN, *Washington:*

New cases, 9; old cases discovered, 6; total reported to-day, 15; deaths, 4; 62 houses disinfected, with 169 rooms; 242 containers, 3 excavations, and 10,000 square feet standing water oiled; 210 premises inspected, 95 sprinkled; 19 faucets put in water barrels; 22 barrels crude oil sprinkled on vacant lots and intervening streets, covering 62 city blocks. Maximum temperature, 86°; minimum, 67°. Superintendent at Minera reported down with yellow fever yesterday—had been in Laredo day before. No cases at Cannel. New Laredo reports 2 new cases.

GUITERAS.

LAREDO, TEX., *October 30, 1903.*WYMAN, *Washington:*

About 40 enlisted men are to be discharged from Fort McIntosh from November 15 to December 1 in batches of two or three at a time. Detention camp at Sanchez will be practically suspended Monday, November 2. Would like to arrange with the Secretary of War to discharge all on November 15. Special cars could be arranged here with medical inspector and quarantine guards to take them to Texas boundary after five days' quarantine detention within Fort McIntosh Reservation; otherwise these men will remain about town, exposed to infection.

GUITERAS.

LAREDO, TEX., *October 31, 1903.*WYMAN, *Washington:*

New cases, 3; old cases, 4; total reported to-day, 7; deaths, 1; 52 houses disinfected, with 147 rooms; 437 containers oiled; 274 premises inspected, 65 sprinkled; 29 faucets put in water barrels; 28 barrels crude oil sprinkled on vacant lots and intervening streets, covering 58 city blocks. Maximum temper-

ature, 79°; minimum, 60°. At my suggestion city council passed ordinance to-day requiring all barrels and water containers to be covered with oil under penalty for violation, and giving service officers right to enter premises and houses for oiling and disinfection purposes. City officials are giving us efficient aid. Cannel reports a case to-day; no report from Minera or New Laredo.

GUITERAS.

LAREDO, TEX., November 1, 1903.

WYMAN, Washington:

New cases, 5; old cases discovered, 6; total reported to-day, 11; deaths, 2; 52 houses disinfected, with 116 rooms; 549 containers and 5 excavations oiled; 132 premises sprinkled, 326 inspected; 27 faucets put in water barrels; 14 barrels crude oil sprinkled on vacant lots and intervening streets, covering 60 city blocks. Maximum temperature, 82°; minimum, 47°. Hundreds of laborers are returning to town from cotton fields; these afford new material for the disease. State attorney-general has rendered an opinion that there is no law to prevent their coming. Nine frontier guards discharged yesterday. No new cases reported at New Laredo; no reports from Minera or Cannel.

GUITERAS.

LAREDO, TEX., November 1, 1903.

WYMAN, Washington:

Bustly engaged in diagnosing and treating cases. Earnestly tried to save several critical cases, with success in some; have been too busy to telegraph.

MURRAY.

LAREDO, TEX., November 2, 1903.

WYMAN, Washington:

New cases, 5; old cases, 4; total reported to-day, 9; deaths, 9; 56 houses disinfected, with 156 rooms. Report from one crew lacking. Three hundred and twenty-one containers and 6 excavations oiled, 188 premises inspected, 48 sprinkled, 16 faucets put in water barrels, 34 barrels of crude oil sprinkled on vacant lots and intervening streets, covering 51 city blocks. Maximum temperature, 81°; minimum, 47°. No cases or deaths reported from New Laredo. Murray went to Cannel to investigate 2 suspicious cases. State detention camp at Sanchez and on Texas-Mexican road practically closed to-day.

GUITERAS.

LAREDO, TEX., November 3, 1903.

WYMAN, Washington:

New cases 6 and old cases 12; total reported, 18. No deaths. Of the old cases reported some are so old that a positive diagnosis is impossible. Sixty-six houses disinfected, with 169 rooms. Yesterday's missing report was 10 houses, with 29 rooms; 283 containers and 4 excavations oiled, 227 premises inspected and 67 sprinkled, 25 faucets put in barrels, 45 barrels crude oil sprinkled on vacant lots and intervening streets, covering 80 city blocks. Maximum temperature, 78°; minimum, 57°. One case reported at Cannel; no report from New Laredo.

GUITERAS.

LAREDO, TEX., November 3, 1903.

WYMAN, Washington:

Visited Cannel mine at Darwin, 2d; 1 new, 1 convalescent; no focus. Management claims illicit contact with Columbia, Mexico. No cases at Minera. Darwin houses will be fumigated daily for a week.

MURRAY.

SAN ANTONIO.

SAN ANTONIO, TEX., October 29, 1903.

WYMAN, Washington:

One case in sixth day of disease and 2 deaths reported to-day. Temperature last twenty-four hours, 56° and 70°.

RICHARDSON.

SAN ANTONIO, TEX., November 2, 1903.

WYMAN, Washington:

Two cases; no deaths to-day. Temperatures last twenty-four hours 50° and 76°. State quarantine modified to allow travel to north and west Texas.

RICHARDSON.

CASES OF YELLOW FEVER IN DEWITT COUNTY.

SAN ANTONIO, TEX., October 27, 1903.

SIR: I have the honor to inform you that, as stated in my telegram of yesterday, the yellow fever seen by Doctor Tabor and myself in Dewitt County, near Cuero, can be quite certainly traced to Laredo.

The house in which these cases have all occurred is located on a ranch about 11 miles north of Cuero and the railroad, nearly 2 miles from any other habitation, and about the same distance from the public road.

On September 21 a Mr. A., who had been employed in Laredo, left that place for Cuero, going directly to the house in question and arriving there about September 25. It will be recalled that the former date is only a day or so in advance of the official declaration of the fever at Laredo.

On September 25 Mr. A. was taken sick. He was not seen by any physician, but was prescribed for over the telephone, his case being diagnosed, from the symptoms given, as dengue fever. He made an uneventful recovery and left the ranch soon after.

On October 13, or eighteen days after Mr. A.'s being taken sick, Mrs. B. became ill. She was seen and treated by a physician, her case being at first considered a severe one of dengue.

On October 16 Mr. B. was taken with the same disease. His case from the first excited the suspicion of the attending physician, and during the course of the disease not a symptom of yellow fever was wanting. He died with black vomit and suppression of urine on the morning of October 26.

During the night of October 25 Mrs. C. was taken sick with the same symptoms that had characterized the other three cases.

Doctor Tabor and myself arrived on the ranch the afternoon of the 26th. Mrs. B. was considered by us both and by the attending physician, Doctor Reuss, as convalescing from yellow fever, and Mrs. C. the first day of the disease.

Several *Stegomyia* were seen in the house, one in particular being caught in Mrs. B.'s sick room.

A necropsy was held on the body of Mr. B. about eight hours after death. The appearance of the cadaver and the necropsic findings were absolutely typical and conclusive.

These cases, I think, isolated as they were on this ranch, present a very conclusive example of the period of extrinsic incubation of the disease, and for that reason I have reported them in detail.

Respectfully,

T. F. RICHARDSON,
Assistant Surgeon.

The SURGEON-GENERAL.

On account of continued warm weather during the early part of November, and considerable prevalence of yellow fever at Tampico, Mexico, it was considered advisable to continue the restrictions upon vessels sailing from that port to the United States. Quarantine officers were so informed and these restrictions were acquiesced in by the State health authorities concerned. The acting assistant surgeon at

Tampico was directed to continue the fumigation of vessels for mosquitoes.

TRANSACTIONS ON ACCOUNT OF YELLOW FEVER AT LAREDO AND SAN ANTONIO.

EL PASO.

EL PASO, TEX., November 5, 1903.

WYMAN, Washington:

About 50 people, mostly railroad employees, arrived here to-day from San Antonio; supposed intention to remain here for completion incubation period, so they can go to other parts of State upon completion six days from San Antonio. Representative State board here gives passenger certificate. Service work here going as usual.

LUMSDEN.

HOUSTON.

HOUSTON, TEX., November 10, 1903.

WYMAN, Washington:

Detention camp near Houston, with guard, still in operation. Local conditions appear satisfactory. Letter follows.

ERESOLE.

LAREDO.

LAREDO, TEX., November 4, 1903.

WYMAN, Washington:

New cases, 7; old cases, 7; total reported, 14; deaths, 3; 45 houses disinfected, with 174 rooms; 431 containers and 7 excavations oiled, 275 premises inspected, 93 sprinkled, 45 faucets put in water barrels, 33 barrels crude oil sprinkled on streets and vacant lots, covering 69 city blocks. Maximum temperature, 97°; minimum, 56°; weather very unfavorable. No cases reported in New Laredo, Minera, or Cannel.

GUITERAS.

LAREDO, TEX., November 5, 1903.

WYMAN, Washington:

New cases, 8; old cases, 4; total reported to-day, 12; no deaths; 72 houses disinfected, with 167 rooms; 747 containers, 44 excavations, and 4 tanks oiled; 355 premises inspected, 115 premises sprinkled, 36 faucets put in water barrels, 34 barrels crude oil sprinkled on streets and vacant lots, covering 85 city blocks. Maximum temperature, 88°; minimum, 57°. One new case reported at Cannel. Nothing new from New Laredo. No report from Minera.

GUITERAS.

LAREDO, TEX., November 6, 1903.

WYMAN, Washington:

Please add to last night's report as follows: Systematic disinfection of the entire city commenced October 30. Up to November 5, 35 city blocks have been disinfected. This is being done without interfering with the disinfection of infected premises as soon as cases are reported.

GUITERAS.

WASHINGTON, November 7, 1903.

GUITERAS, Laredo, Tex.:

Am informed by War Department that garrison will be temporarily removed to camp few miles from post.

WYMAN.

WASHINGTON, November 7, 1903.

GUITERAS, Laredo, Tex.:

Authorized to submit nomination Doctor McGregor by letter and place on duty from November 7.

WYMAN.

LAREDO, TEX., November 6, 1903.

WYMAN, Washington:

New cases, 9; old cases, 9; total reported to-day, 18; deaths, 4; 82 houses disinfected, with 241 rooms; 638 containers, 5 tanks, and 111 excavations oiled; 330 premises inspected and 123 sprinkled, covering 52 city blocks; 46 faucets put in water barrels. Oilers of water containers have covered the city for the second time and are now on third round. Maximum temperature, 86°; minimum, 47°. Cannel reports 1 new case, making a total of 5 to date. Minera reports 3 new cases, all from the same source of infection as the first case after general disinfection. No report from New Laredo. Necessary to have medical inspectors to inspect disinfected districts to report all cases of illness, to prevent spread of new foci that may arise. Have nominated to-day McGregor for this purpose. Will require additional inspectors later on.

GUITERAS.

LAREDO, TEX., November 7, 1903.

WYMAN, Washington:

A visit for two days at Monterey convinces me that yellow fever has existed there since August 1 and had original different dates. Over one-half the minimum population of 60,000 has suffered with a disease, and the deaths exceed many times the reported number. Over 500 persons down with this disease at this moment. All the stations from Saltillo to Laredo have borne the stigma of deaths and the distresses of sickness. In fact, about every ranch has suffered. The number of cases and deaths will never be known, but there has been only a moderate amount of dread, fear, and disorder of business. There are no quarantines south of Monterey worthy of the name, and that on the Mexican National has become useless on account of the immunizing of residents and crews. Commercial interests in Mexico begin to dread the effect of next year's embargoes and seem willing to have more explicit statements from the infected region, rather than suffer in future more than will be fair to the people and their interests. I found no hint of infection at Saltillo, although many cases have been treated there and several deaths occurred. There seems to be no *Stegomyia* at that point.

MURRAY.

WASHINGTON, November 7, 1903.

GUITERAS, Laredo, Tex.:

Wire on what grounds detention camp for Laredo was closed. If for pecuniary reasons, why not confer with Tabor with regard to opening it by Bureau? Wire number of people who were passed through it.

WYMAN.

LAREDO, TEX., November 7, 1903.

WYMAN, Washington:

Detention camp for Laredo was closed for following reasons: Pecuniary, and because certificates issued were not honored by various points in Texas. State quarantine officer McKnight informs me that Tabor does not now object to the Service opening camp. I received no information of the closing of the detention camp until two days prior to closing, and then not officially. I hesitate to recommend reopening under Service auspices, fearing certificates might not be honored. Will obtain information relative to this point. About 70 persons passed through camp from October 1 to November 2.

GUITERAS.

LAREDO, TEX., November 7, 1903.

WYMAN, Washington:

New cases, 15; old cases, 5; total reported to-day, 20; deaths, 2; 81 houses, with 202 rooms, disinfected; this includes 3 churches, 715 containers, 16 excavations, 6 tanks, and 12,000 feet standing water oiled; 392 premises inspected and 100 sprinkled, covering 06 city blocks; 70 faucets put into barrels. Maximum temperature 83°, minimum 52°. No new cases at Cannel, Minera, or New Laredo. The weather continues unfavorable, and hundreds of laborers from the cotton fields of northern Texas are returning daily. This, and the impossibility of having all cases reported promptly, accounts for the increase in the number of cases. The city ordinance referred to in my telegram of October 31 goes into effect the 10th instant; at the same time a volunteer force of inspectors, composed of prominent citizens, will patrol the town to report all cases of illness.

GUITERAS.

LAREDO, TEX., November 8, 1903.

WYMAN, Washington:

New cases, 8; old cases, 4; total reported to-day, 12; 45 houses disinfected, with 190 rooms; 586 containers, 32 excavations, 5 tanks, and 61 premises oiled; 303 premises inspected, covering 42 city blocks. Maximum temperature, 82°; minimum, 59°. No cases at Nuevo Laredo. No report from Cannel or Minera. Murray goes to Monterey.

GUITERAS.

LAREDO, TEX., November 9, 1903.

WYMAN, Washington:

New cases, 13; old cases, 12; total reported to-day, 25; deaths, 4, all discovered dead; 59 houses disinfected, with 257 rooms—this includes post-office and custom-house; 550 containers, 19 excavations, 3 tanks, and 88 premises oiled; 306 premises inspected, 55 faucets put in barrels, 31 barrels of crude oil sprinkled on streets and vacant lots, covering 52 city blocks. Maximum temperature, 86°; minimum, 54°. Two new cases reported at Cannel. No report from Minera or New Laredo. From the fact that 12 old cases and 4 dead were discovered to-day, you may judge of the difficulties we have to contend with in controlling the disease. The protracted warm spell, the hundreds of laborers returning to town from the cotton fields, and the hidden cases have given new impulse to the epidemic and upset all my calculations. Am now putting on my own inspectors to report cases of sickness in those quarters of the town that have been disinfected. For this purpose am using acting assistant surgeons heretofore in charge of disinfection crews, and appointed a few new ones as inspectors. The disinfecting crews will be directed by the foremen. Tabor wires that detention camp will be at once resumed by State if considered necessary.

GUITERAS.

WASHINGTON, November 10, 1903.

GUITERAS, Laredo, Tex.:

Recent rains, warm weather, and return of laborers evidently complicate your work, but it should be prosecuted vigorously upon same lines as not only beneficial at present time but also for next year. If reopening detention camp by State is desirable, suggest matter to Tabor.

WYMAN.

LAREDO, TEX., November 10, 1903.

WYMAN, Washington:

New cases, 5; old cases, 14; total reported to-day, 19; deaths, 5; 75 houses disinfected, with 292 rooms; 421 houses inspected; 651 containers, 12 tanks, 82 excavations, and 120 premises oiled; 360 premises inspected, 26 faucets put

in barrels, 35 barrels of crude oil sprinkled on streets and vacant lots, covering 72 city blocks. Maximum temperature, 84°; minimum, 62°. No cases or deaths at New Laredo. Cannel reports 3 new cases, making a total of 11 to date. Minera reports 7 new cases. The mass meeting yesterday did not accomplish as much as was expected; only about 27 citizens have volunteered for inspection work, and it is doubtful if this number will report for work to-morrow. Tabor will be here to-morrow morning.

GUITERAS.

SAN ANTONIO, TEX., November 6, 1903.

WYMAN, Washington:

Two cases, no deaths reported to-day. Temperatures last twenty-four hours, 46° and 74°.

RICHARDSON.

SAN ANTONIO, TEX., November 9, 1903.

WYMAN, Washington:

No case or death to-day. Temperatures last twenty-four hours 50° and 78°. Visited Sutherland Springs to-day—town 30 miles east of here; population about 150. Doctor Weston, the only practitioner there, has treated since August about 100 cases of a fever which, from his description, I believe to have been yellow, with 4 deaths. Disease seems to have died out for want of material. Tabor has instructed county authorities to disinfect.

RICHARDSON.

SAN ANTONIO, TEX., November 10, 1903.

WYMAN, Washington:

One case; no deaths to-day. Temperature last twenty-four hours, 58° and 78°.

RICHARDSON.

HOUSTON, TEX., November 15, 1903.

WYMAN, Washington:

State health authorities meet San Antonio to-morrow to consider State situation and measures needed. Local authorities invite me to accompany them; no expense. Would leave to-night, return Tuesday morning. Ask if my going is approved.

EBERSOLE.

WASHINGTON, November 15, 1903.

EBERSOLE, Rice Hotel, Houston, Tex.:

Proceed to San Antonio and return, as requested.

WYMAN.

LAREDO, TEX., November 11, 1903.

WYMAN, Washington:

New cases, 15; old cases, 7; total reported to-day, 22; deaths, none; 81 houses disinfected, with 229 rooms; 432 houses inspected; 536 containers, 7 tanks, 57 excavations, and 113 premises oiled; 290 premises inspected, 36 faucets put in barrels, 32 barrels of crude oil sprinkled on vacant lots and intervening streets, covering 70 city blocks. Oilers of containers are now covering the city for the fourth time. Maximum temperature, 82°; minimum, 65°. Cannel reports 1 new case, making a total of 12 to date. No report from New Laredo or Minera. Twelve volunteer inspectors reported for duty and were assigned. Tabor arrived this morning; several conferences were held during day. The principal object was to devise means for thorough inspection of city and prompt notification of cases. Differences of opinion, whether paid or volun-

teer best. Tabor declined to incur expense of paid service, but expressed willingness to have Service institute it. * * * Murray returned from Monterey to-night. Doctor Nixon died this morning.

GUITERAS.

LAREDO, TEX., November 12, 1903.

WYMAN, Washington:

New cases, 12; old cases, 8; total reported to-day, 20; deaths, none; 76 houses disinfected, with 238 rooms; 403 houses and 1,087 persons inspected; 550 containers, 3 tanks, 100 excavations, and 171 premises oiled; 54 faucets put in barrels; 384 premises inspected; 31 barrels of crude oil sprinkled on vacant lots and intervening streets, covering 80 city blocks. Maximum temperature, 88°; minimum, 45°. New Laredo reports 2 cases and 1 death. Two new cases reported at Cannel and 2 at Minera.

GUITERAS.

LAREDO, TEX., November 13, 1903.

WYMAN, Washington:

New cases, 11; old cases, 20; total reported to-day, 31; deaths, 4. The increase is due to the work of the volunteer inspectors. Ninety-seven of these were on duty to-day and did good work. Am surprised that the number of cases discovered is not greater. Ninety-three houses, with 305 rooms, disinfected; 633 containers, 2 tanks, 93 excavations, and 125 premises oiled; 370 premises inspected; 42 faucets applied to barrels; 39 barrels of crude oil sprinkled on streets and vacant lots, covering 85 city blocks. Maximum temperature, 96°; minimum, 56°. Nothing new at New Laredo. Minera reports 7 new cases; Cannel 2 new cases.

GUITERAS.

LAREDO, TEX., November 14, 1903.

WYMAN, Washington:

New cases, 10; old cases, 15; total reported to-day, 25; death, 1; 71 houses disinfected, with 288 rooms; 658 containers, 92 excavations, 8 tanks, and 136 premises oiled; 381 premises inspected; 33 faucets put in water barrels; 34 barrels crude oil sprinkled on vacant lots and streets, covering 74 blocks. Maximum temperature, 96°; minimum, 58°. New Laredo reports 1 death and no new cases; nothing new at Cannel. No reports from Minera. Volunteer inspection service proving a marked success.

GUITERAS.

LAREDO, TEX., November 15, 1903.

WYMAN, Washington:

New cases, 18; old cases, 4; total reported to-day, 22; deaths, 2; 55 houses disinfected, with 237 rooms. Maximum temperature, 93°; minimum, 51°. No report Minera or Cannel. New Laredo reports nothing new.

GUITERAS.

LAREDO, TEX., November 15, 1903.

WYMAN, Washington:

Murray badly injured in runaway. Fracture of clavicle, scapula, and both bones of right leg; severe contusions around shoulder. Now resting easily at Mercy Hospital. Guiteras escaped with a general shaking up and a few contusions.

GUITERAS.

WASHINGTON, November 15, 1903.

GUITERAS, Laredo, Tex.:

Express to Murray my sympathy and that of the Bureau and inform me if there is anything we can do in his behalf. Trust your own injuries will not prove serious.

WYMAN.

LAREDO, TEX., November 16, 1903.

WYMAN, Washington:

New cases, 17; old cases, 5; total reported, 22; deaths, 6; 83 houses disinfected, with 364 rooms; 391 containers, 156 excavations, 10 wells, and 38 premises oiled; 28 faucets put in barrels; 372 premises inspected; 29 barrels of crude oil sprinkled on vacant lots and intervening streets, covering 74 city blocks. Maximum temperature, 90°; minimum, 69°. Minera reports 4 new cases Saturday and 4 Sunday. Cannel reports 1 new case. New Laredo reports nothing new.

GUITERAS.

LAREDO, TEX., November 16, 1903.

WYMAN, Washington:

Please add to last night's report 690 containers, 202 excavations, and 1 tank oiled, 102 premises inspected, 20 faucets put in water barrels, 30 barrels of crude oil sprinkled on vacant lots and intervening streets, covering 74 city blocks.

GUITERAS.

LAREDO, TEX., November 17, 1903.

WYMAN, Washington:

New cases, 33; old cases, 4; total reported, 37; deaths, 2; 72 houses disinfected, with 245 rooms; 520 containers, 125 excavations, 4 tanks, 6 wells, and 29 premises oiled; 6 faucets put in barrels; 191 premises inspected; 25 barrels crude oil sprinkled on vacant lots and intervening streets, covering 118 city blocks. Maximum temperature, 68°; minimum, 54°. Cannel reports 2 cases. No report from Minera. New Laredo reports nothing new.

GUITERAS.

SAN ANTONIO, TEX., November 12, 1903.

WYMAN, Washington:

One case in third day of disease; no deaths reported to-day; temperature, 43° and 68°; light frost last night.

RICHARDSON.

SAN ANTONIO, TEX., November 13, 1903.

WYMAN, Washington:

One case, 2 deaths to-day. Case was found after death and had no medical attention. Temperature, 44° and 78°.

RICHARDSON.

SAN ANTONIO, TEX., November 14, 1903.

WYMAN, Washington:

One case, 1 death to-day. This case was discovered after death. Temperature, 66° and 86°.

RICHARDSON.

WASHINGTON, November 16, 1903.

SIR: Referring to your telegrams from San Antonio, it is found that there is no explicit statement that mosquito screens are being used over patients sick with fever. The Bureau would like to have some statement in regard to this, so that it may know that in addition to the measures taken to exterminate mosquitoes the other measure, equally necessary, of screening individual fever cases, is being carried out.

Respectfully,

WALTER WYMAN,
Surgeon-General.

Asst. Surg. T. F. RICHARDSON,
Public Health and Marine-Hospital Service,
San Antonio, Tex.

[Telegrams.]

SAN ANTONIO, TEX., November 19, 1903.

WYMAN, Washington:

Referring Bureau letter 16th, all physicians agreed to screen all febrile cases. The city furnishes nets to patients unable to purchase. Believe screening sick bed has been very generally done. All cases I have seen were screened.

RICHARDSON.

SAN ANTONIO, TEX., November 18, 1903.

WYMAN, Washington:

State quarantine against San Antonio raised at noon to-day. Several counties still holding their quarantines.

RICHARDSON.

AUSTIN, TEX., November 21, 1903.

WYMAN, Washington:

On account of Richardson familiar with conditions in San Antonio. I would like to see him remain there for present if does not interfere with your plans.

GEO. R. TABOR, State Health Officer.

HOUSTON, TEX., November 21, 1903.

WYMAN, Washington:

State and local quarantines against San Antonio raised. Detention camps around Houston discontinued. No restrictions upon traffic from there.

EBERSOLE.

LAREDO, TEX., November 18, 1903.

WYMAN, Washington:

New cases, 10; old cases, 6; total reported to-day, 16; deaths, 2; 63 houses disinfected, with 161 rooms; 420 containers, 160 excavations, 14 tanks, 7 wells, and 77 premises oiled; 146 premises inspected, 31 barrels of crude oil sprinkled on vacant lots and intervening streets, covering 66 city blocks. Maximum temperature, 57°; minimum, 42°. Cannel reports 1 new case; Minera reports no new cases, 1 death. Nuevo Laredo reports nothing new. Additional officers recommended in telegram of November 11 are not now necessary. Tabor sent for additional physicians, who arrived here last Saturday. The volunteer inspection service is still in active operation and giving good results. The favorable change in the weather and the work being done make me hope the epidemic may soon be controlled.

GUITERAS.

LAREDO, TEX., November 19, 1903.

WYMAN, Washington:

New cases, 17; old cases, 2; total reported to-day, 19; deaths, 2; 98 houses disinfected, with 276 rooms; 538 containers, 9 premises, 85 excavations, 6 tanks, and 13 wells oiled; 156 premises inspected; 3 faucets put in barrels; 12,000 square feet of standing water oiled; 25 barrels crude oil sprinkled on vacant lots and intervening streets, covering 73 city blocks. Maximum temperature, 52°; minimum, 33°. Cannel, Minera, and Nuevo Laredo report nothing new. Considerable opposition encountered in disinfection on account of cool weather.

GUITERAS.

LAREDO, TEX., November 20, 1903.

WYMAN, Washington:

Cases reported to-day, 19, all new; deaths, none; 117 houses disinfected, with 278 rooms; 579 containers, 235 excavations, 16 wells, 7 tanks, and 21 premises

oiled; 157 premises inspected; 13 barrels of crude oil sprinkled on vacant lots and intervening streets, covering 60 blocks. Maximum temperature, 56°; minimum, 36°. Cannel reports 1 new case; Nuevo Laredo, 2 cases. Minera reports nothing new. Through trains on Mexican National will resume to-morrow. It is hoped to have the International and Great Northern also resume their trains. Six frontier guards discharged to-day. Six more will be discharged in a day or two. Have retained guards at bridges and principal crossings in the neighborhood of Laredo and Minera. On account of cold weather prevailing I would recommend raising the quarantine against Mexico.

GUITERAS.

LAREDO, TEX., November 21, 1903.

WYMAN, Washington:

Cases developed since last report, 10; deaths, 1; 102 houses disinfected, with 299 rooms; 873 containers, 305 excavations, 20 premises, 17 wells, and 5 tanks oiled; 285 barrels of crude oil sprinkled on vacant lots and intervening streets, covering 74 city blocks. Maximum temperature, 66°; minimum, 56°. Cannel reports 1 new case, and Minera 1. No report from New Laredo. Weather continues favorable, and the decline in the number of cases should continue. Goldberger arrived to-night.

GUITERAS.

DEATH OF SURGEON MURRAY.

LAREDO, TEX., November 22, 1903.

WYMAN, Washington:

I regret to have to report the death of Surgeon Murray at 7.30 this morning.

GUITERAS.

AUSTIN, TEX., November 22, 1903.

WYMAN, Washington:

Texas mourns with you in loss of Doctor Murray, whose noble work at Laredo has endeared him to all classes. Will furnish escort of physicians for body through State.

TABOR, State Health Officer.

PEARSALL, TEX., November 23, 1903.

WYMAN, Washington:

Am sending four physicians as escort for Doctor Murray's remains through State. Have ordered flags at stations half-masted until after funeral. Texas appreciates his services.

TABOR, State Health Officer.

LAREDO, TEX., November 22, 1903.

WYMAN, Washington:

Cases reported to-day, 6; deaths, none; 50 houses disinfected, with 198 rooms; 286 containers, 114 excavations, 31 premises, and 6 wells oiled; 78 premises inspected; 15 barrels of crude oil sprinkled on vacant lots and intervening streets, covering 42 city blocks. Maximum temperature, 77°; minimum, 52°. New Laredo reports 1 death; no report from Cannel or Minera.

GUITERAS.

LAREDO, TEX., November 23, 1903.

WYMAN, Washington:

Cases developed since last report, 4; deaths, 2; 52 houses disinfected, 237 rooms; 212 containers, 122 excavations, 6 premises, 1 well, and 2 tanks oiled. Fifty-eight premises inspected; 21 barrels of crude oil sprinkled on vacant lots

and intervening streets, covering 44 city blocks. Maximum temperature, 82°; minimum, 50°. Minera reports 5 new cases. Cannel reports 1 new case for to-day and 1 for yesterday. Nuevo Laredo reports nothing new. Through trains from Mexico City to St. Louis, Mo., commenced during yesterday. Do not stop. Monterey customs inspection of baggage will be done at New Laredo as in normal times. Passengers from Saltillo will be required to have certificate of 5 days from any infected focus. From points south of Saltillo, no certificates required. This is a great relief to railroad traffic. Tabor arrived to-night.

GUITERAS.

LAREDO, TEX., November 23, 1904.

WYMAN, Washington:

Conditions in Laredo are rapidly improving. Season too advanced to admit of danger of infecting outside territory. Quarantine against Mexico and Laredo, Tex., should be raised; post epidemic work should be continued; recommend Frick remain in charge of this work, assisted by Hamilton and Sauvignet; other assistant surgeons to be discharged. Fully one-third of city, including the most densely populated center, has been disinfected. This does not include infected houses disinfected. Would suggest that Von Ezdorf be detailed to inspect along the railroad from Laredo, covering Monterey, Linares, Victoria, and other infected points, to ascertain what is being done or will be done toward sanitation against continuance of disease of latent form during winter. Would have preferred to do this work myself, but do not feel equal to it. Vertigo still persists, though improved. Events of last week have left me in poor shape, and would prefer, if possible, to return to my station and start work on my report.

GUITERAS.

WASHINGTON, November 27, 1903.

GUITERAS, Laredo, Tex.:

Authorized to store camp equipment as recommended. All public property should be collected, listed, and receipted for by Hamilton. Discontinue all services not now required. Frick will remain in charge. Wire specific recommendation as to expense and scope of post-epidemic work. Von Ezdorf will receive letter of instructions as to inspection recommended. Collect all data for full report of operations and hold yourself in readiness for orders to rejoin station.

WYMAN.

WASHINGTON, November 30, 1903.

GUITERAS, Laredo, Tex.:

Replying to your telegram 28th relative to post-epidemic disinfection, wire what necessity for continuation of considerable work in addition to what has already been done. State exactly scope proposed work and personnel required in addition to Frick.

WYMAN.

LAREDO, TEX., November 30, 1903.

WYMAN, Washington:

Replying to telegram relative to post-epidemic disinfection, would state that it is proposed to continue systematic disinfection of houses until every house in the city is disinfected, and to continue the oiling of containers at the same time, with the object of killing mosquitoes and preventing their propagation. Nearly one-half of the city has been disinfected. In addition to Frick, propose to retain Sauvignet and about 40 laborers, divided into four oiling crews and two disinfecting crews. With this force I estimate that the work can be done in thirty days. The object of this post-epidemic disinfection is to prevent the disease from continuing throughout the winter and appearing again in epidemic form next summer. The work done has confined the number of cases during the present epidemic to 1,044, so that there still remains a large nonimmune population, furnishing material for spread under favorable circumstances. If the

winter should be severe this post-epidemic work might not be necessary, but the severity of the weather here is very uncertain.

GUITERAS.

WASHINGTON, December 1, 1903.

FRICK (through Surgeon GUITERAS), Laredo, Tex.:

You are hereby directed to assume charge of Service work in Laredo upon departure of Surgeon Guiteras. When practicable, expenditures should be previously approved by Bureau, and in all cases kept within lowest possible limit.

WYMAN.

WASHINGTON, December 2, 1903.

VON EZDORF, Laredo, Tex.:

You are directed to make quiet investigation and mail full reports upon suspected and infected points upon Mexican National and Mexican Gulf railroads, including Monterey, Linares, and as far as Ciudad Victoria. Confer first with consular authorities; obtain mortality statistics for past four months; probable number cases and deaths yellow fever; methods employed for suppression; winter temperatures and probable outlook for next season; also include inspection of Saltillo. Upon return, make full reports upon conditions in Nuevo Laredo and await orders Laredo.

WYMAN.

LAREDO, TEX., November 30, 1903

WYMAN, Washington:

Governor's proclamation raising State quarantine against Laredo goes into effect at noon to-day. Transferred property to Hamilton this morning. Tabor and I held conference with city council and got their promise, willingly given, to aid and carry into effect all measures of post-epidemic work.

GUITERAS.

Subsequent to the active prevalence of yellow fever in Laredo, Tex., the post-epidemic work for the suppression of the infection was continued in the general inspection of premises, oiling of water containers, etc., as set forth in the report of Passed Assistant Surgeon Richardson, embracing the period from the early part of December, 1903, to June 30, 1904, and it is undoubtedly due to this municipal sanitary work that there has been no recrudescence of yellow fever in this semitropical portion of the State.

The necessity for an amicable arrangement between the Republic of Mexico and the United States, in order to secure adequate measures for the prevention of the recurrence of yellow fever in the spring, received early recognition.

The principal results attained by drainage, mosquito destruction, and screening of water containers upon the American side served as a basis for friendly agreement between the two countries for a joint effort in this direction. This agreement was the result of a conference between the Surgeon-General of the Public Health and Marine-Hospital Service and the officials of the Republic of Mexico, held at the City of Mexico in January of the present year.

The results of this agreement are shown in the extensive improvements of sanitary conditions in the territory involved.

MEASURES RECOMMENDED FOR ADOPTION BY THE UNITED STATES AND MEXICO FOR
THE PREVENTION OF YELLOW FEVER.MEXICO CITY, MEXICO, *January 12, 1904.*

SIR: Referring to our several conferences regarding the yellow-fever situation in the United States and Mexico, I beg leave to transmit herewith, for your consideration, a copy of an order issued by myself December 29, 1903, convening the sanitary board of the Bureau of the Public Health and Marine-Hospital Service, in which is set forth the reasons prompting me to bring this matter to your kind attention. Inclosed also is a copy of the report, in which measures are recommended for adoption in both Republics which I am convinced would be effective, if properly executed, in preventing a recurrence of this disease.

I have to request that you will give these papers your serious consideration, and inform me what action may be expected of your board with regard to these matters.

I have the honor to remain, respectfully, yours,

WALTER WYMAN,
*Surgeon-General, Public Health and
Marine-Hospital Service of the United States.*

Dr. E. LICEAGA,
President Superior Board of Health, Mexico City, Mexico.

[Inclosures.]

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, December 29, 1903.

SIR: You are directed to call a meeting of the sanitary board and to invite Passed Asst. Surg. R. H. von Ezdorf to meet with you, on account of his familiarity with the yellow-fever situation in Mexico. You are informed that on December 14 Dr. John R. Tabor, State health officer of Texas, and Dr. Edmond Souchon, president of the Louisiana State board of health, came to Washington for the special purpose of a consultation with the Surgeon-General of the Public Health and Marine-Hospital Service concerning this matter. Formal request was made for consultation with the health authorities of Mexico to induce said Republic to undertake sanitary work in the cities of Mexico recently infected with yellow fever, in order that they should not become a menace to the United States during the coming season.

Inclosed are letters from Representatives James L. Slayden and John N. Garner, of Texas, written with the same end in view. They have supplemented their letters by personal interviews.

You are directed to report upon the necessity of some such action on the part of the Mexican Government and to indicate clearly what measures it should be asked to enforce and what reciprocal measures should be enforced on the United States side of the border.

The report of Passed Assistant Surgeon Von Ezdorf upon the infected Mexican cities is transmitted for your information. The measures which the Mexican Government may be asked to enforce should be practical and no greater than might reasonably be expected. You are informed that it is my intention to visit the City of Mexico within a short time for the purpose of bringing this matter before the Mexican Government, and your report will be a guide to me in my representations.

Respectfully,

WALTER WYMAN,
Surgeon-General.

Asst Surg. Gen. A. H. GLENNAN,
*Chairman Sanitary Board
Public Health and Marine-Hospital Service.*

REPORT OF THE SANITARY BOARD.

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, December 30, 1903.

SIR: Pursuant to your directions, dated December 29, 1903, to convene a meeting of the sanitary board of the Public Health and Marine-Hospital Service to formulate general plans of sanitation, to be prosecuted in both the Republic of Mexico and in the United States, with a view to the adoption of measures for the eradication of the infection of yellow fever in places infected with the disease both in Mexico and the United States, the following report is respectfully submitted:

The board recommends, as a basis for the precautions to be taken, those measures recommended in the article entitled "Prophylaxis against yellow fever," by Dr. John Guiteras, published in the Public Health Reports of July 31, 1903 (copy inclosed), with the following additions and alterations. Some of these additions and recommendations are embodied in the article by yourself entitled "A plan for international agreement of the American Republics for the sanitation of certain seacoast cities," published as a reprint of the Public Health Reports of October 11, 1901 (copy also inclosed).

The board, observing its instructions, considers that the measures recommended are practical and no greater than may be enforced with the least possible delay in either country. These measures demand immediate adoption and prosecution in order to avert the danger of a recrudescence of the disease during the coming spring in the cities recently infected. It is not necessary to emphasize that such a recrudescence would cause serious embarrassment to commerce, with all of its monetary loss and attendant evils.

The measures recommended are as follows:

1. The prompt report of all cases of suspicious fever to the local health authorities where they occur, the immediate screening of the patient, and the destruction of mosquitoes on the premises, pending the making of the diagnosis. The occurrence of the first authentic cases of yellow fever in either Republic should be immediately reported by wire to the other Republic.

2. Vigorous methods of post-epidemic fumigation with sulphur to be inaugurated without delay in both Republics in places where infection has occurred during the latter part of the past year.

3. Efficient sanitary measures in towns and places which have been infected with yellow fever during the past year, as follows: Burning of brush, drainage of all stagnant water, oiling of all stagnant water drainage of which is impracticable, all water containers to be treated at least once, and oftener if necessary, with a thin film of refined oil deposited upon their surfaces, and to be tightly screened and to be constantly covered to prevent access of mosquitoes, a penalty to be imposed for the absence of said screens and covers.

4. The oiling, screens, and covers provided for in the foregoing paragraph shall be at the expense of the tenants or owners, but in the case of tenants who are unable to comply with said provisions the municipality shall provide the same. Sanitary inspection shall be made from time to time to enforce this provision, and a fine imposed for noncompliance.

5. In order that these measures may receive due credit in both countries, it should be agreed that agents of the superior board of health of Mexico will be received in any town or place in the United States where yellow fever has prevailed to note the enforcement of the above provisions and to invite the attention of the sanitary authorities to any lapse in the same; any fault in administration or in the completeness of measures to be undertaken to be corrected by the proper sanitary authorities of the United States. In like manner officers of the Public Health and Marine-Hospital Service, detailed for duty in the offices of the United States consulates in any Mexican city, to be granted every facility for observation as to the enforcement of the same measures in cities and towns of Mexico that have been infected with yellow fever.

6. This board is of the opinion, and so recommends, that should the occurrence of yellow fever render the establishment of border quarantine necessary, the period of detention, based upon the incubation of the disease, should not exceed six days, and that the disinfection of personal effects, mails, and freights, not harboring mosquitoes, should not be required.

In compliance with the instructions, Passed Asst. Surg. R. H. Von Ezdorf, Public Health and Marine-Hospital Service, was invited and was present at the

meetings of the board, and use was made by the board of his knowledge of the situation.

A copy of the order convening the board and the inclosures accompanying the original thereof are herewith returned.

Respectfully,

A. H. GLENNAN, *Chairman.*
Assistant Surgeon-General.
 W. J. PETTUS,
Assistant Surgeon-General.
 GEORGE T. VAUGHAN,
Assistant Surgeon-General.
 H. D. GEDDINGS, *Recorder,*
Assistant Surgeon-General.

SURGEON-GENERAL U. S. PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
 Washington, D. C.

SUPERIOR BOARD OF HEALTH.
 Mexico City, Mexico, January 13, 1904.

DEAR SIR: I am in receipt of your favor of yesterday's date, in which you refer to the different conferences that we have had and in which we have discussed the subject of yellow fever in the United States and Mexico, which latter inclosed a copy of the orders, issued on the 29th of December last, for convening a meeting of the sanitary board of the Public Health Department and Marine-Hospital Service of the United States, and also stating the reasons that prompted you to communicate this matter to myself. Your letter also inclosed the report presented by that board, in which it recommends the measures that ought to be adopted by both Republics, and you ask me to give all these documents the careful consideration which they merit and report to you on the measure that will be adopted by the superior board of health of Mexico in the premises.

In answer to the above, I now beg to state as follows:

The interest which was aroused by the invasion of the State of Texas by yellow fever, in the public officers of that State, its Representatives in Congress, the press of the United States and the Department which you so worthily direct, has suggested the idea that action should be taken to prevent the reappearance of the disease, both in the southern part of the United States as well as in the north of the Mexican Republic. This reciprocal interest in the two nations has decided you to come to this city in order to explain your ideas on the subject and inform yourself of those which are held in Mexico.

The wide views which you have always shown in the study of sanitary matters are again manifested in the series of orders that you have issued for obtaining information from the officers of your Department who are best versed on the question of yellow fever. These measures not only reveal the solicitude with which you carry out your duties, but also the desire that the Mexican Republic should cooperate in the same sense.

The Mexican Republic, for its part, has been taking active and earnest steps to exterminate yellow fever from its territory, and more especially when, during last summer, that disease spread in an epidemic form to several cities of the Gulf States and to some interior cities as well, such as in the States of Nuevo Leon and San Luis Potosi. It would make this letter too long for me to enter into a relation of all the labors undertaken by the Federal Government for the extinguishing of the epidemic of yellow fever, and I therefore confine myself to stating that the Executive of the Union, acting through the superior board of health took action in all of the States except one, and was fortunately able to detain the epidemic, which had spread over a larger area than that reached on previous occasions.

But in order to correspond to your elevated ideas, I will now proceed to explain the plan proposed by my Government in order to utilize the entire period between this and the approaching summer, when yellow fever makes its appearance, and thus avoid its propagation. You will find all the ideas of the superior board of health of Mexico on this matter, given in a condensed form, in a proposed plan that this body has presented to the department of the Interior, asking that those States in which yellow fever prevails in an epidemic form, and in which it has spread as an epidemic, to consent that the supreme board of health undertake the direction of the campaign, so as to obtain uniformity of

action on the part of the sanitary authorities, and direct the proper disbursement of the sum of \$100,000 which the Chamber of Deputies granted to the Federal Executive for the purposes of this campaign.

In the "plan of campaign" above mentioned, we have a clear statement of the doctrine of the transmission of yellow fever by means of the mosquito of the genus *Stegomyia fasciata*, and the means best adapted for the isolation of persons attacked by the disease or suspected of being so from the first day of its appearance are also therein clearly set forth. It also shows the method to be employed in the disinfection of the houses that are occupied by these patients, and in which it is to be presumed that infected mosquitoes will be found; the practical means for destroying the larvæ of the mosquito of the genus above mentioned; the way to prevent the disease from being carried from an infected city to another which is healthy, and the steps to be taken for avoiding the spread of the epidemic after the appearance of the first case in a city that has hitherto not been infected. I take pleasure in inclosing with this letter a copy, in Spanish, of the above plan of campaign with its translation in English.

The report which the sanitary board of the Public Health Department and Marine-Hospital Service of the United States presented to yourself on the 30th of December last proposes a series of measures that are intended to be put in practice as soon as possible in the two Republics for the purpose of preventing the reappearance of yellow fever in the two countries during the approaching summer. These measures, based on the scientific principles which have governed the superior board of health of Mexico, ought to be identical, and really are so, as can be ascertained by a comparison of these documents. Those reports ask that both nations be bound to declare any new case of yellow fever that may present itself in any locality of their respective territories. This declaration has been made by the superior board of health of Mexico ever since the 17th of December, 1902, in compliance with one of the resolutions that were adopted in the International Sanitary Convention which met in Washington during that month. As you will see, the Mexican Republic is already in the habit of fulfilling that obligation.

The second recommendation advocates the rigorous disinfection by sulphur of every dwelling which has been used by a yellow-fever patient. This precaution has been observed in Mexico ever since the commencement of the epidemic of the past year, and will be continued with even more rigor and greater perfection in the new campaign which we are now undertaking, as you will see from the document I inclose with this letter. In that document you will find a series of measures proposed similar to those that are recommended by the sanitary board of the Public Health Department of the United States, with the only difference that it says nothing as to the burning of the brush, as we were not aware that the mosquitoes hide there during the period of hibernation, but this idea is now accepted. The same thing can be said of the other proposals of the sanitary board above mentioned.

From the above you will clearly understand that the action recommended by your Department for preventing the reappearance of yellow fever is very similar to that which has been put in practice for some time past by the Government of Mexico.

In the numerous conferences that we have had I have explained to you the manner to render these measures more practical and efficacious, but I will now only remind you of those which have been put in practice in Vera Cruz since the 1st of September of last year. Vera Cruz is the oldest and most permanent focus of endemic in the Mexican Republic. All the epidemics have found their origin in this place, and very seldom in the northern districts of the peninsula of Yucatan, and even in the case of the last two epidemics in the port of Tampico they were started in Vera Cruz, for which reason this is the place that demands our principal attention.

The town has been divided into four districts, each of which is placed under the charge of an experienced physician, and each of these has sanitary agents of the first class placed under his orders. Subordinate to these are other agents of the second class, and a certain number of servants. The inspector keeps a register in which they enter the full name of every nonimmune who resides in Vera Cruz, the place whence he comes, the time he has been in the port, and the house in which he lives. These persons are visited daily in order to catch the first symptom of any fever. As soon as a nonimmune is found to have a high temperature he is isolated on suspicion in the civil and military hospital of the city, and in the case of healthy persons, in a special hospital that has been provided by the superior board of health of Mexico for those who are suspected or

known to have yellow fever. These patients are isolated from the moment the disease commences, whatever may be their sex, social position, or nationality, and you will therefore see that with such a system it is impossible for yellow fever to be reproduced in an epidemic form in the port of Vera Cruz.

The sanitary staff above referred to also charges itself with the disinfection, by means of sulphur, of the houses in which yellow-fever patients have been attended, as well as the neighboring houses, for fear of any infected mosquitoes having remained therein. These employees also see that the garbage is taken out of the houses, the swamps drained, the drinking-water reservoirs kept clean, and that they are covered in such a way as to prevent the mosquitoes depositing their eggs in them, as well as that petroleum be spread over all bodies of water that can not be covered. By following these methods the epidemic which appeared in Vera Cruz was controlled, and it will be possible to avoid the reappearance of the epidemic during the coming summer.

During the coming week a sanitary board will commence its duties, composed of an experienced physician in this class of work and four first-class sanitary agents, such as I have above referred to. This staff will visit every one of those places that were invaded by yellow fever during last summer, so as to carry out a fresh disinfection of the houses. The physician will in each place give instructions to a select staff on the methods of executing this operation, show the way to drain the swamps, to fill up those which can not be drained, and to spread petroleum over bodies of water that necessarily must remain uncovered, and to see that all others are constantly covered. These operations will be carried out in Monterey and Linares.

I hope, General, that you will now be convinced of all the efforts that are being made in the Mexican Republic to stamp out yellow fever from its territory, and of the efficiency of those that are about to be put in practice during the remaining months of the winter, and I believe that you will also be convinced of our good will to carry out that work, not only on the part of the President of the Republic and secretary of the interior, but still more on the part of the superior board of health, which is charged with the execution of those orders.

I have the honor to remain, yours, very sincerely,

E. LICEAGA.

DR. WALTER WYMAN,
*Surgeon-General of the Public Health and Marine-Hospital
Service of the United States, City.*

LEGISLATION IN TEXAS IN REGARD TO DISINFECTION.

AN ACT Requiring the disinfection of public buildings, railway coaches, and sleeping cars, and providing a penalty for the violation thereof, and declaring an emergency.

SECTION 1. *Be it enacted by the legislature of the State of Texas.* That it shall be the duty of the State health officer of Texas, and he is hereby authorized and empowered, to prepare rules and regulations governing the proper disinfection and sanitation of public buildings and all railway coaches and sleeping cars operated in the State of Texas.

SEC. 2. It shall be his duty, and he is hereby authorized and empowered, to prescribe a sanitary code, which shall contain and provide rules and regulations of a general nature for the improvement and amelioration of the hygienic and sanitary condition of said public buildings, railway coaches, and sleeping cars.

SEC. 3. Every person having control of any public building, railway company, sleeping car company, or other corporation, company, or individual, or the receiver thereof, engaged in the carrying of passengers in this State, shall, at their own expense, within a prescribed time after receiving notice from the State health officer of the promulgation of the rules and regulations in the above sections mentioned, carry the same into effect.

SEC. 4. If any person having control of any public building, or any agent, manager, operator, employee, or receiver of any railway company, sleeping car company, or any individual shall fail to comply with the provisions of this act and the rules and regulations promulgated by the State health officer under the provisions thereof, he shall be deemed guilty of a misdemeanor, and upon conviction shall be punished by a fine of not less than fifty nor more than two hundred dollars.

Approved April 6, 1903.

Circular No. 1.

By virtue of the authority vested in me by the above act of the twenty-eighth legislature, the following rules are hereby prescribed, which shall govern the disinfection and sanitation of public buildings, railway coaches, and sleeping cars in the State of Texas, and shall be effective on and after February 11, 1904:

1. Each passenger coach or sleeping car used for passengers must be provided with one cuspidor for each seat or every two chairs. Each cuspidor must contain not less than 6 ounces of a disinfectant solution approved by this department. The cuspidors to be emptied, washed in a similar solution, and replenished each trip or every twenty-four hours.

2. Public buildings must be provided with sufficient number of cuspidors, or not less than one in each room or hall, treated in a like manner, and emptied, washed, and replenished daily.

3. The floors of cars and public buildings must be sprinkled with a similar solution before each sweeping.

4. Sweeping and dusting of cars are prohibited in transit, except that floors of cars may be swept at division terminals or meal stations, where passengers will be given an opportunity to leave the cars during that time. Seats, windows, and walls of cars must be wiped off with a cloth or sponge and not dusted in transit.

5. All sleeping cars must be disinfected by fumigation in a manner approved by this department at the end of each round trip in the State of Texas where sleeping cars do not leave the State.

6. All sleeping cars passing through or coming into the State of Texas must be disinfected in the same manner each trip at some point in the State approved by this department. All carpets, curtains, blankets, and bedding, except linen, to be disinfected with cars.

7. Day coaches used for passengers must be fumigated, whenever the necessity exists, at some point in this State acceptable to this department. If a car becomes infected by being occupied by a person having a contagious disease, it must be disinfected immediately at end of run.

8. All public buildings must be disinfected by fumigation whenever the necessity exists for it.

9. Containers of water for drinking in cars and public buildings must be emptied and thoroughly cleansed at least once every forty-eight hours. (Public schools should be provided with a separate cup at each desk for each pupil to drink from or the pupils should be required to provide same.)

10. Ice which is used in water coolers in cars must not be dumped on the floors, sidewalks, and car platforms where people have trod and expectorated, and then picked up by unclean hands and put into the drinking water. It should be washed and handled with ice tongs.

11. Passengers, patrons, employees, or others must be prohibited from washing their teeth over or expectorating in basins in sleeping cars, passenger coaches, or public buildings which are used for bathing the face and hands. Large cuspidors must be provided for such purposes.

All local health officers and citizens are requested to assist in the enforcement of the above rules.

GEORGE R. TABOR,
State Health Officer.

AUSTIN, TEX., January 11, 1904.

In the early spring additional measures were inaugurated for a close surveillance of the territory infected the previous season. A memorandum was prepared by the Bureau, setting forth the regulations which should be enforced by the local authorities, and transmitted to the medical officer in command at Laredo, Tex. The city council passed an ordinance based upon this memorandum, and subsequently other municipalities in the State of Texas passed similar measures. The matter is set forth in the following correspondence:

CORRESPONDENCE RELATIVE TO PREVENTION OF THE RECRUDESCENCE OF YELLOW FEVER ALONG THE TEXAS-MEXICAN BORDER.

. [Telegrams.]

WASHINGTON, March 5, 1904.

State Health Officer TABOR, Austin, Tex.:

Have just received telegram from Frick, at Laredo, stating city council, March 3, after statement of their inability by reason of exhausted treasury, had passed the following resolution:

(Quoted in full below.)

"A resolution.

"Whereas it is generally believed that yellow fever exists all seasons of the year in Vera Cruz, Republic of Mexico, which point is of no great distance from Laredo, and is in daily railway communication with this city; and

"Whereas the warm season is rapidly approaching and the quarantine heretofore established and maintained against Vera Cruz has not been of such nature as to inspire confidence or arrest the spread of the disease; and

"Whereas the city of Laredo has in the past five years suffered so intensely from the blight of droughts and epidemics that her financial condition is strained to the limit of the constitution and her treasury exhausted, and is therefore unable to employ the means to carry on the necessary precautions to prevent a recurrence of the yellow fever during the coming warm season: Therefore, be it

"Resolved by the city council of the city of Laredo, Texas, That the Public Health and Marine-Hospital Service of the United States be, and it is hereby, requested to at once furnish the means and reassume the inspection, disinfection, and all other means necessary for the prevention and suppression of all contagious and infectious diseases, and especially that of yellow fever; and said city does hereby pledge itself to render all moral support and legal aid to the Public Health and Marine-Hospital Service of the United States in carrying out the purpose of this resolution."

Frick recommends immediate resumption special inspection and oiling of water containers by the Service; estimated cost, with screening of fever cases, \$30 per day. *Stegomyia* larvae have recently been found in various portions of Laredo. Desire to have statement from you whether your Department or the State of Texas can take charge of this matter and perform the work or whether the State has the power to require the city of Laredo to do it. Kindly answer.

WYMAN.

AUSTIN, TEX., March 7, 1904.

WYMAN, Washington:

Will communicate with Laredo authorities and advise you earliest possible.

TABOR.

AUSTIN, TEX., March 17, 1904.

WYMAN, Washington:

State of Texas will render your Department every assistance in continuing sanitary work and inspection service at Laredo and would like to see you place larger force there immediately. Full authority and any other assistance your men require will be given, but this department will retain control of quarantine in the State.

TABOR.

WASHINGTON, March 18, 1904.

TABOR, Health Officer, Austin, Tex.:

With approval Secretary Treasury propose to act in accordance with your telegram of March 17 and on request of city council of Laredo.

WYMAN.

WASHINGTON, March 16, 1904.

DEAR DOCTOR: Referring to my telegram to you to-day, stating that Assistant Surgeon Richardson, who has recently passed his examination for promotion to be passed assistant surgeon, has been assigned to duty at Laredo, I have to inform you that this is done as part of a plan for the coming summer and fall.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

Dr. GEORGE R. TABOR,
State Health Officer, Austin Tex.

WASHINGTON, March 21, 1904.

SIR: Confirming telegram of to-day, which concluded with the statement "letter follows," addressed to Acting Assistant Surgeon Frick, I transmit herewith a memorandum outlining the plan of operations which the Bureau considers necessary at the present time in Laredo, Tex.

It will be observed that to carry out the measures indicated some provision should be made by the city council for penalties for failure to comply with the requirements. It may be advisable also that an ordinance be passed authorizing the inspections and other requirements mentioned in the memorandum together with the penalty.

Respectfully,

WALTER WYMAN,
Surgeon-General.

Asst. Surg. T. F. RICHARDSON,
Public Health and Marine-Hospital Service, Laredo, Tex.

[Memorandum—Laredo, Tex.]

MARCH 18, 1904.

1. The city council should pass an ordinance requiring both physicians and all householders to report to the city health officer every case of fever coming within their knowledge. By "fever" is meant fever of any character, whether it is deemed malarial, or from a cold, or rheumatism, or any other cause.

2. Every case of fever as described in paragraph 1 shall be immediately covered with a mosquito netting until its removal is authorized by the city health officer. The householder will be held responsible for seeing that this provision is enforced. If the patient or his friends, or the householder, is unable to supply said mosquito netting the same will be furnished on application by the Public Health and Marine-Hospital Service.

3. Every such case, as soon as reported, will be immediately visited by the city health officer, or his accredited medical agent, who shall report to the health officer; and the said mosquito netting shall be kept over the patient until permission is given by the city health officer or agent, in writing, for its removal.

4. If the health officer considers the case suspicious of yellow fever, unless the diagnosis of yellow fever is positively excluded, he shall place a guard at the house to see that the mosquito netting is kept over the patient.

5. A house-to-house inspection must be immediately organized. The city should be divided into twenty or thirty districts and a lay inspector appointed for each district, whose whole time shall be given to the inspection. Of first importance is the discovery of cases, but report of inspector should include sanitary conditions, particularly as regards water barrels and other places where mosquitoes might breed. Each inspector should go over his whole district daily, Sundays included.

6. Fumigation to destroy mosquitoes should be made for all such fever cases as, in the opinion of the health officer, require it. This shall not only include the houses containing such cases, but such adjoining premises and houses as the health officer may indicate.

7. Blank forms should be furnished the inspectors who make the house-to-house inspection, and these forms should also contain a blank space for reporting on the cisterns and water barrels, etc., whether the same are covered to prevent the breeding of mosquitoes.

8. An ordinance should be passed inflicting a fine upon householders on whose premises the larvæ of mosquitoes are found, at the same time the ordinance should require all water containers to be so screened or treated with petroleum as to prevent the breeding of mosquitoes. Notice should be given that any householder unable to provide the necessary covering or petroleum will have the

same furnished upon application to the Public Health and Marine-Hospital Service.

9. On the report of the inspector showing that any of the above requirements have been neglected, the health officer will immediately remedy the defects and report the cases to the proper legal authority for prosecution. The health officer shall have power to suspend the penalty in his discretion if the defect complained of is immediately remedied.

10. When in the opinion of the health officer a case suspected of being yellow fever can not be efficiently screened and treated at the patient's home, the health officer shall have power to transfer the patient to a properly screened fever sanitarium.

DAILY HOUSE-TO-HOUSE INSPECTION OF LAREDO, TEX.—OBJECTS TO BE ATTAINED AND THEORY ON WHICH IS BASED DETERMINATION OF THE LENGTH OF TIME IT SHOULD BE CONTINUED.

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, April 11, 1904.

SIR: The Bureau has been in receipt of your daily telegrams announcing the number of premises inspected, water containers treated, etc., and it is understood that since March 24 there has been a daily house-to-house inspection of Laredo, the city having been divided into 30 districts and each district inspected every twenty-four hours. It becomes necessary to have an understanding with you as to the length of time this work is to be continued. For this reason the objects to be attained and the theory involved may be reviewed as follows:

1. The detection of any case of yellow fever and the prevention of any such case becoming an infecting agent by screening the patients, fumigation, etc.

2. The discovery of fevers of any kind and screening the cases until they are positively known not to be yellow fever.

3. The treating of water containers, etc., to prevent breeding of mosquitoes.

4. The last case declared to be yellow fever, in Laredo, was noted March 14. Mosquitoes which may have bitten this case would have required 12 days to become infective and an individual bitten by them after the twelfth day would have required five days for development of the disease. Therefore, in seventeen days the second infection might have developed.

Of course the mosquito remains infective after the twelfth day, and the second infection may develop, therefore, long after the seventeen days, but each daily house-to-house inspection after the seventeenth day, which has developed no case of yellow fever, increases the probability of safety.

In the event that the patient was bitten by a mosquito before March 14 the second infection should have been developed by the inspections before March 31.

If all fever cases had been screened since March 14 the probability of mosquitoes becoming infected after March 14 would be remote, and after 20 or 22 days from March 14, viz, April 3 to 5, a daily house-to-house inspection having shown no succeeding case of yellow fever, the probabilities of there being any case of yellow fever on April 5 would not have been great.

But although the city was under surveillance and partial inspection, there was not a daily house-to-house inspection until March 24. Therefore it would seem advisable to advance the date on which the house-to-house inspection is to be discontinued a corresponding number days, namely, ten days, or April 15.

When, however, the daily house-to-house inspection is discontinued, it would be well to have a select corps to make a more circumscribed inspection; and should occasion arise, the daily inspection of the whole 30 districts could be resumed. You will wire for instructions before discontinuing the daily inspection.

Some of the force which you have had in operation, being well trained, might be detailed for the work along the railroads in the carrying on of the mosquito warfare, which has been the subject of communications between the Bureau, State Health Officer Tabor, and yourself.

Respectfully,

WALTER WYMAN,
Surgeon-General.

Asst. Surg. T. F. RICHARDSON,
Public Health and Marine-Hospital Service, Laredo, Tex.

[Memorandum prepared by the Bureau, relative to mosquito destruction.]

MOSQUITOES, THEIR DANGER, AND METHODS OF DESTROYING THEM.

The presence of mosquitoes near any locality inhabited by people is an element of danger on account of the diseases that may be conveyed by them, especially malaria and yellow fever; therefore, it is a matter of great importance to bring about the destruction of mosquitoes and their larvæ in such localities.

During warm weather from one to three weeks is necessary for the stages of development of the mosquito from the egg to the winged insect.

The mosquito lays its eggs on the water. In the course of from one to two days these eggs hatch into wrigglers, which may be seen in your water barrels. After a week or ten days these wrigglers change into the mature winged insects. There are two stages in the development of the wriggler; the first, as it hatches from the egg, is called the larva, and the second, the pupa.

Mosquitoes breed only in water—usually fresh standing water. Yellow-fever mosquitoes prefer water in barrels, cisterns, pools, old cans, broken bottles, and similar containers in the back yard of your house or about your premises. The malarial mosquitoes prefer natural pools, ponds and puddles in the fields, streams, and woods.

Mosquitoes usually live and feed in the neighborhood of the water in which they breed, and as a rule do not fly far.

Although the wrigglers live in water they must come frequently to the surface to breathe. Coal oil on the surface of the water prevents the wrigglers from breathing. Destroy the breeding places and you will exterminate the mosquitoes.

Place fine wire netting, at least 18 meshes to the inch, over cisterns, wells, and tanks of water which can not be dispensed with. Water should not be allowed to stand about premises in tubs, buckets, cans, flower pots, vases, broken bottles, or any other receptacle, however small. Such deposits of water can at once become breeding places for mosquitoes, and should under no circumstances be allowed to stand undisturbed even as long as forty-eight hours.

The presence of mosquito larvæ in premises constitutes "a nuisance prejudicial to the public health" and should be punishable by a fine.

Where there are ponds near the house which can not be oiled or drained, on account of their being used for watering stock, they should be stocked with some small varieties of fish, such as perch, minnows, or goldfish, which eat the eggs and wrigglers of the mosquitoes as they float, and in this way prevent them from hatching into full-fledged insects. These ponds should be kept free from vegetation of any kind, as weeds, water lilies, etc., especially around the edges, which may afford hiding places for the eggs and larvæ and prevent the fish from catching them.

Screen your house and always sleep under a mosquito bar, even while you lie down for a short rest at noon.

All mosquito bars and screens should be closely woven and contain not less than 18 meshes to the inch.

Winged insects in the house may be best killed as follows: First, by burning sulphur, not less than one pound per thousand cubic feet, with an exposure of two hours; second, by burning pyrethrum, sometimes called "Persian" insect powder, or bulach, in proportion of two pounds per thousand cubic feet, and an exposure of two hours; third, by burning tobacco in the proportion of two pounds per thousand cubic feet and an exposure of not less than two hours. Hydrocyanic-acid gas will kill mosquitoes, but is too dangerous to use about the house or other inhabited places.

All openings, such as windows, doors, crevices, etc., should be tightly closed while fumigating to kill insects.

The question having arisen as to the evidence to be furnished by persons traveling from places infected or suspected of yellow fever the previous season and where a recrudescence of the disease might take place, the Bureau, after mature consideration and conference with the State health officer of Texas, decided that the stationing of officers of the Service at points in Mexico to issue certificates of absence from such points was inadvisable.

WASHINGTON, April 25, 1904.

SIR: You are hereby directed to convene a meeting of the sanitary board for the purpose of taking into consideration measures to be adopted by the Bureau in connection with the inspection service on the Texas-Mexican border.

Your attention is called to dispatch from Passed Assistant Surgeon Richardson stating that an order has been issued by the State health officer of Texas requiring all passengers at the border of Mexico to bring certificates from either the State or Public Health and Marine-Hospital Service officers to the effect that they have not been in an infected place for five days previous. Your attention is also called to the existing regulations of the Service for the Mexican border, paragraph 143, which requires persons not positively identified as immune to yellow fever, coming from places where yellow fever prevails, to be forbidden entry until they have been away from said localities five full days. At the present time it is not known that yellow fever prevails anywhere in Mexico, although it is supposed to exist in Veracruz.

Doctor Tabor has requested, through Doctor Richardson, that medical officers be stationed at consulates in Mexico City, San Luis Potosi, Saltillo, and Torreon, to issue certificates. The placing of officers of this Government in the Republic of Mexico for this purpose when it is not known that yellow fever is prevailing anywhere is questionable.

You are requested to canvass the subject and make report as to what requirements are advisable at the present time.

Respectfully,

WALTER WYMAN, *Surgeon-General*.

CHAIRMAN SANITARY BOARD

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,

Washington, D. C.

WASHINGTON, April 26, 1904.

SIR: As directed in Bureau order dated April 25, 1904, directing a meeting of the sanitary board for the purpose of taking into consideration measures to be adopted by the Bureau in connection with the inspection service on the Texas-Mexican border, the board have the honor to submit the following report:

After carefully considering the different sections of the quarantine regulations promulgated against Mexico by the State health officer of Texas, to be enforced and take effect after the 30th of April, 1904, the board arrived at the following conclusion:

We are of the opinion that the danger of infection of yellow fever may be disregarded, unless the disease has prevailed in a given locality within sixty-five days immediately preceding this date, provided that all cases of fever have been investigated, screened against the access of mosquitoes, and treated as suspicious until a diagnosis of "not yellow fever" has been arrived at.

The board is of the further opinion that the stationing of Service officers at points in the interior of Mexico for the purpose of issuing certificates of non-residence in an infected locality to passengers leaving for the United States possesses no advantage over the presentation of evidence by all such passengers to the Service inspectors at the Texas-Mexican border, as has been the system in past years.

We believe that the inspection service at Eagle Pass and El Paso, Tex., should be strengthened from this time by the stationing of additional officers at those points.

We further believe that a quarantine directed against the whole of a large country, certain limited portions of which only are known to have been infected with yellow fever within the past twelve months, is unscientific and a distinct retrograde step. A rational measure, however, would be occasional inspection during the present season of places in Mexico along the railroad lines reported last year as having the infection of yellow fever, with a view to obtaining early information of any recrudescence of the disease in those places, which could then be guarded against by appropriate measures.

Respectfully,

A. H. GLENNAN,
*Assistant Surgeon-General, Chairman.*W. J. PETTUS,
*Assistant Surgeon-General.*G. T. VAUGHAN,
*Assistant Surgeon-General.*H. D. GEDDINGS,
Assistant Surgeon-General.

M. J. ROSENAC,

Passed Assistant Surgeon, Director of Hygienic Laboratory, Recorder.

A sanitary inspection of the territory situated in the triangles between San Antonio, Laredo, Corpus Christi, and Brownsville was inaugurated and officers detailed to investigate the conditions along the lines of railway travel to detect any possible recrudescence of the disease. A campaign of instruction, showing the methods of drainage, destruction of mosquitoes, oiling of water containers, etc., and the screening of all fever patients, was carried out, supplemented with aid in fumigation of premises, etc., where requested, and no doubt the generally satisfactory condition of affairs at the time of this report is due to this early anticipatory sanitary campaign in aid of the State and local authorities.

In addition to the measures already enumerated, it was considered advisable as a precautionary measure to prepare, pack, and store small camp outfits at five points upon the Louisiana-Texas border, thereby saving time in shipment should an emergency arise. These camp outfits were accordingly stored at the selected points.

The reports of the officers engaged in the work of suppression of yellow fever are appended.

REPORT ON THE EPIDEMIC OF YELLOW FEVER OF 1903 AT LAREDO, MINERA, AND CANNEL, TEX., BY SURG. G. M. GUITERAS.

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Cairo, Ill., March 19, 1904.

SIR: In accordance with Bureau orders dated September 22, 1903, I left Cairo, Ill., at 1.30 p. m., arriving at San Antonio, Tex., the morning of September 25. Here I met Dr. George R. Tabor, State health officer of Texas, and we together proceeded to Laredo, Tex., arriving at 4.30 p. m. of the same day. During the trip we discussed the probable situation at Laredo and the steps to be taken to combat the outbreak at that point.

Among other things, we touched on the necessity of a detention camp. In the name of the Government I offered to establish and run such a camp. The offer, however, was courteously refused by Doctor Tabor for the reason that he believed it would appear derogatory to the dignity of the State of Texas so to do.

On our arrival at Laredo we were met by Acting Asst. Surg. H. J. Hamilton, United States Public Health and Marine-Hospital Service, Doctor McKnight, State health officer at Laredo, and several other physicians. In company with these gentlemen we went at once to view the two fatal cases of supposed yellow fever that had occurred during the day, Cortina and Gilkerson. In both the history was that of yellow fever, and the external appearances in connection with the history left no doubt as to the diagnosis.

An autopsy was performed in the case of Gilkerson, and all the characteristic post-mortem signs of the disease were found. These cases resided in two widely separated parts of the town. It was impossible to define the source of infection in either case.

In the evening a conference was held between the city and county authorities, physicians of Laredo, and Doctor Tabor and myself. At this conference the city and county authorities expressed their willingness to aid in every way except financially, stating that both city and county were without funds, and pointing out the fact that their position in this respect was so hopeless that the mayor, Dr. Amador Sanchez, had generously refused to accept his salary as mayor, amounting to \$1,500 per annum.

Thereupon Doctor Tabor took charge of the situation, accepting the cooperation of the Public Health and Marine-Hospital Service, offered by the writer. It was determined that the mayor should issue a proclamation declaring the presence of yellow fever in the city and advising the citizens as to their duties under the circumstances.

Doctor Tabor likewise issued a proclamation declaring a State quarantine against Laredo, herewith appended, marked "Exhibit A."

It was decided later between Doctor Tabor and myself that the Public Health

and Marine-Hospital Service should take charge of the sanitary measures to stamp out the epidemic and keep up the quarantine guard on the frontier, which had been previously established by Acting Assistant Surgeon Hamilton. Doctor Tabor was to establish and control a detention camp and look after the protection of the State of Texas against infection.

I regretted not being able to take charge of this camp, but the fact that the distance from Laredo to the nearest point on the Texas frontier within the United States is about 575 miles the protection of the surrounding territory amounted in fact to the protection of the State of Texas and evidently devolved upon the State authorities if they were willing to undertake it.

Doctor Tabor also was to organize and enforce a house-to-house inspection, should such become necessary, as, in fact, it did within a few days.

The fact that 2 deaths from yellow fever had occurred in two widely separated points led to the belief that the disease had been present in Laredo for some time and had obtained considerable headway. This was shown to be true when 3 suspicious cases were reported the following day, September 26, which were promptly confirmed, and 6 positive cases and 1 death reported on September 27. From September 25 to 28, 13 positive cases, 3 deaths, and 7 suspects were recorded. No clearly defined connection could be found between these cases, although they seemed grouped around three foci. It was, moreover, very probable that the number of cases was greater than appeared from the official record, inasmuch as, with one or two exceptions, the Laredo physicians were unacquainted with yellow fever, and at that time, when there were still many persons who denied the existence of the disease, they were lukewarm in reporting cases. In addition, the ignorant class of the population seldom called in a physician, fearful that they might be quarantined or sent to a hospital.

It was, therefore, evident at this time that the disease had obtained a firm foothold and was widely disseminated in a population consisting almost entirely of nonimmunes. It was reasonable to suppose that the disease had existed for several weeks and that we were in the period of the third mosquito infection.

Now, turning our attention toward the other side of the Rio Grande, to the Mexican town of Nuevo Laredo, situated directly opposite to Laredo, Tex., and connected therewith by a railroad bridge, a foot bridge, boat ferries, and several easily travelled fords, we find that up to September 25 the health authorities there had reported 6 cases and 4 deaths from yellow fever. The first officially reported case was a death, that of Doctor Ruiz on September 14, and immediately thereafter quarantine was declared against Nuevo Laredo. A conference with the health authorities of the town and an inspection of the same showed conclusively that the number of cases was much greater than that reported, and that the disease was widely spread.

ORIGIN OF THE EPIDEMIC.

Yellow fever appeared in Tampico, Mexico, during the spring of 1903, as early as May 4, and spread rapidly. From here the disease was propagated along the line of the Mexican National Railroad, reaching Victoria, Linares, and Monterey.

The Mexican sanitary authorities established quarantines to protect these places, but it is well known, and the results clearly show, that these quarantines were not effective. The authorities of these towns, moreover, instituted a system of denials of the presence of yellow fever in their midst, the same methods usually practiced among us in the Southern States under like circumstances, with the result that a feeling of false security was established and the disease given every opportunity to spread.

There is good reason to believe that yellow fever existed in Monterey as early as the latter part of June, a death from what would appear to be that disease having occurred on June 24. The deceased, Manuel Porras, was a near relative of Mr. Barker, our clerk in the office of the Public Health and Marine-Hospital Service at Laredo, Tex., and the history of the case herewith appended (marked "Exhibit B") was obtained with great care and is worthy of credence.

The first published report of a case of yellow fever in Monterey was issued August 29. It will be seen, therefore, that if the case of Porras was yellow fever, as I am inclined to believe, two months and over elapsed before any steps were taken to prevent its spread from that city. Under such circumstances it is easy to conceive how the disease extended along the Mexican National Railroad and reached the two Laredos on the Rio Grande.

Careful investigation shows that the infection of Nuevo Laredo may have

originated from Victoria, in the State of Tamaulipas, Mexico. This town, which is the capital of the State above mentioned, is situated on the line of the Mexican National Railroad and about 150 miles to the north and west of Tampico. I quote from Acting Assistant Surgeon Hamilton's report on this subject, he having been detailed especially to make this investigation: " * * * A family left Victoria, Mexico, for Nuevo Laredo on August 4, arriving in Nuevo Laredo August 5. One child had come down with fever at Monterey, another took ill upon arrival at Nuevo Laredo. This family lived near the principal plaza of Nuevo Laredo, where persons from both sides of the border resort for amusement. Neighbors and visitors of this family began having mild attacks of fever about August 25, many of whom lived about the above-mentioned plaza. * * * In Nuevo Laredo the fever spread rapidly, so that when the first known case died on September 14, recognized through an autopsy, the town was completely infected, especially the central portion."

From all the information obtainable there is good reason to believe that the disease introduced into Nuevo Laredo from Victoria was yellow fever, and it was noted further that persons attacked did not subsequently contract yellow fever when the epidemic was at its height.

Inasmuch as the two Laredos are practicably one town and the plaza, above referred to, is frequented night and day by Americans from Laredo, Tex., it is evident that but a short time would have elapsed before the disease could have been introduced into Laredo. On the other hand we have the evidence of Doctor Lowry to the effect that Mr. Clarke, president of the Texas-Mexican Railroad, was treated by him at Laredo, Tex., for yellow fever on or about July 25. Mr. Clarke had come directly from Monterey before being taken ill.

Doctor Lowry is one of the most prominent physicians of Laredo, and had had considerable experience with yellow fever. He states that he was puzzled as to the diagnosis in Mr. Clarke's case at the time, but in the light of after events he felt so sure that it had been a case of yellow fever that he issued a certificate to that effect.

All the above facts show the impossibility of fixing the exact date or mode of the introduction of yellow fever into Laredo, Tex., but they also go to demonstrate the fact that it must have been late in July or the beginning of August, and that the disease was imported from Monterey or Victoria or perhaps both.

The disease at first must have spread slowly (as was to be expected), for an examination of the mortality reports do not show anything suspicious until the month of September. During the last half of this month the disease evidently gathered rapid headway, and within a few days after our arrival (September 25) it was found to be pretty generally disseminated throughout the two Laredos.

The *Stegomyia fasciata* was also found in enormous numbers and widely distributed, and this, with the existing conditions with regard to the water supply, were such that every facility was being afforded for the active propagation of this mosquito.

GENERAL CONDITIONS.

The two Laredos are situated opposite each other on either side of the Rio Grande, which is at this point about 500 yards wide, with a small islet over toward the American shore. Two bridges span the river—one for pedestrians and vehicles, the other a railroad bridge. Besides these means of communication there is a boat ferry, and the stream itself is easily fordable at several points.

Under normal conditions the population of Laredo, Tex., is estimated at 18,000, and that of Nuevo Laredo at 8,000 souls. During the late summer and fall there is a large efflux of the laboring classes who go to the Texas cotton fields to obtain employment in gathering that crop. The rumors of the existence of yellow fever and the final declaration of its presence in Nuevo Laredo on September 15, and in Laredo on September 25, caused a large exodus, the extent of which is variously estimated.

The general impression is that during the epidemic there remained about 10,000 people in Laredo and 6,000 in Nuevo Laredo. This number was materially increased during the latter stages of the epidemic—that is, during the month of November—by the return of the cotton pickers. This introduction of new material at that time exerted a baneful influence in the suppression of the epidemic.

The population of Nuevo Laredo, of course, consists almost entirely of Mexicans, there being very few Americans. In a measure the same might be said of Laredo, Tex. It is estimated that there are but 3,000 Americans in the place.

Moreover, the Mexican population consists almost entirely of Mexicans of the lower class, ignorant and superstitious.

The water supply of both towns is obtained from the same source, the Rio Grande. A private waterworks company situated on the American side supplies both towns, although the rates are such that the poorer classes do not or can not avail themselves of its advantages, so that the sale of water on the streets by means of water carts is a thriving industry. These carts obtain their water directly from the river. The water supplied by the waterworks company, although filtered, is claimed to be very muddy the greater part of the year. This and the use of water taken directly from the river have given rise to the general custom of using barrels for the purpose of allowing the water to settle. Every house is supplied with from one to ten water casks. These are naturally kept in sheds or some dark or shady place around the premises. As breeding places for mosquitoes, and especially the *Stegomyia fasciata*, it would be difficult to improve upon them.

The habitations of the poorer classes are of the very worst type. Many are simply adobe huts with thatched roofs and consist of but one room, with probably a shed outside, utilized as a kitchen. Others are made of lumber with no attempt at apposition of the planks, while others, again, are partly or wholly constructed of old pieces of tin or iron, with just enough lumber to attach these thereto. It is no exaggeration to say that in most parts of the States domestic animals are housed better than many of the people of Laredo.

Two railroads enter Laredo from the north and east, the International and Great Northern and the Texas-Mexican, respectively. These connect across the railway bridge already mentioned with the Mexican National on the other side of the Rio Grande.

As already stated, the financial condition of the city of Laredo and of Webb County was such that neither had any funds available to carry out measures for the suppression of the epidemic.

Such, then, in brief, were the surroundings and circumstances which confronted us when the presence of yellow fever was officially declared at Laredo September 25.

Quarantine against Laredo having been declared by the State health officer, all railroad traffic out of Laredo to points in the United States was at once stopped. Through traffic southward, that is, to points in Mexico, was continued. So far as the Texas-Mexican Railroad running from Laredo to Corpus Christi is concerned, this suspension of traffic continued throughout the epidemic, despite the efforts made to reestablish it.

Through passenger travel via the International and Great Northern Railroad to points north of Arkansas, Indian Territory, and the Ohio River was resumed on September 28 and continued, with several interruptions, during the epidemic. These interruptions were due in part to the shotgun quarantines instituted along the line, particularly by Encinal and Frio counties, and also to the lack of effort on the part of the railroad. They were doing a losing business, and it was immaterial to them whether they continued operations or not, and the Federal and State authorities seemed impotent to compel them to fulfill the requirements of their charter.

In view of the accepted laws, based on well-proven and indisputable facts relative to the propagation of yellow fever by the *Stegomyia fasciata*, it must be said that the quarantine restrictions imposed by the State health officer were unnecessarily severe and likely to defeat the end in view on account of their severity. The restrictions were, in fact, the same that have been imposed in previous yellow-fever epidemics, and, if anything, somewhat more stringent. In this, however, Doctor Tabor was perfectly frank and honest. While accepting the facts so brilliantly shown in the extermination of yellow fever in Habana, he felt that he could not accept in their entirety the deductions resulting therefrom. He also argued, and I think justly, that even if he were to establish an intelligent and rational system of quarantine, public opinion would not support him, and the result would have been that the State quarantine would have been supplanted by innumerable vexatious county, shotgun, and other irrational systems of quarantine. In this Doctor Tabor was quite right; but yet it remains a debatable question whether it is better under such circumstances to yield to public clamor or to insist on the truth and act accordingly. I confess that I would prefer the latter.

Freight traffic from Laredo was entirely suspended during the epidemic, working great hardship to the business interests of the town. It seemed a pity to

see these interests sacrificed when there were means whereby they could have been conserved without danger of carrying infection.

DETENTION CAMP.

A detention or refugee camp was, of course, necessary to facilitate the exit of people from Laredo. The Public Health and Marine-Hospital Bureau had made provision for such an emergency when the first rumors of yellow fever on the border were circulated, two or three weeks before the disease was officially announced to be present in Laredo. A complete camp outfit for 100 persons had been shipped from New Orleans and arrived in the neighborhood of Laredo at the very moment when it was most needed. Owing to this wise provision of the Bureau, we were enabled at a critical moment to offer Doctor Tabor the material necessary for a detention camp, of which, for the reasons already stated, he considered it his duty to take charge.

One of the camps was situated at Sanchez, a siding about five miles north of Laredo, on the International and Great Northern Railroad, and Doctor Cock, a capable officer, placed in charge of the same. The camp was opened October 2, with sufficient accommodation for 25 refugees. Later on its capacity was increased to 40.

A small camp, known as "Camp Daniel," was also established on the Texas-Mexican Railroad, about 5 miles to the east of the city. This was scarcely utilized, for the reason that Duval and Nueces counties, through which the road runs, had instituted a quarantine of absolute nonintercourse. The outfit for both camps was loaned to the State authorities by the Public Health and Marine-Hospital Service.

Camp Sanchez had a varied existence. It served a good purpose, although not much patronized, only about 70 persons passing through the camp from October 1 to November 2. It became infected October 14; that is, a case of yellow fever developed among the refugees and remained there for seven or eight hours before it was removed, long enough to have infected some mosquitoes, if any were present. Another case of yellow fever occurred at the camp during the month of October. The camp was closed November 2, and then reopened about November 14 at the urgent request of citizens.

The certificates of Camp Sanchez were, in some cases, rejected by county authorities.

QUARANTINE AGAINST MEXICO.

To prevent the introduction of further infection, a strict quarantine was kept up against infected points in Mexico. The border—that is, the Rio Grande—was patrolled by guards. These consisted of a number of Texas Rangers, under the direction of State Health Officer Tabor, and about 50 men employed by the Service and aided by United States customs inspectors. They worked harmoniously together and did good service, although I do not consider that the patrol was entirely effective. The natural conditions of the river between the two cities, and for miles above and below, are such that it would take a very large force of well-disciplined men to make it absolutely secure against the possibility of anyone crossing who had especial interest in doing so and possessed the necessary courage.

A chart is herewith appended (marked "Exhibit C") showing the frontier protected by the guards, as also the numerous fords and ferries affording means of communication across the river. Of course, when quarantine was declared against New Laredo, September 15, all skiffs were prohibited from crossing.

SANITARY WORK OF SERVICE.

As before stated, the work assigned to the Public Health and Marine-Hospital Service, at the conference of September 25, was the most important in the campaign against the prevailing epidemic of yellow fever. It consisted, firstly, of protecting the border against the admission of any additional infection, and, secondly, the stamping out of the epidemic in Laredo. The frontier guard had already been established by Acting Assistant Surgeon Hamilton, and has been briefly described above.

The second and more important part of our undertaking was entered into with great enthusiasm, and during the first few days we were filled with the hope that our efforts would be crowned with brilliant results; that is, that we would be able to wipe out the epidemic in a month or six weeks. In this we were doomed to disappointment. It was soon found that the disease was too widely spread and that the obstacles to be overcome in carrying out the necessary sanitary measures were many and serious, and in some cases insurmountable under existing circumstances. However, while the results of our efforts did not come up to our expectations, they were gratifying and productive of much good, as the sequel will show.

The day after my arrival two disinfecting and screening gangs were at work under my personal supervision, and the newly appointed acting assistant surgeons, E. H. Sanvignet, A. W. Wilcox, and Robert L. Dinwiddle, were given instructions on mosquito disinfection as practiced in Habana and as described by Dr. John Guiteras in Public Health Reports of July 12, 1903.

Acting Asst. Surg. John Frick reported for duty the morning of September 26, Pharmacist M. Walerius the same afternoon, and Passed Asst. Surg. R. H. von Ezdorf the following day. Surg. R. D. Murray joined us on the 28th. Pharmacist and Special Disbursing Agent F. S. Goodman reported first week in October.

On September 26 an office was established in the central part of the city for the transaction of business, and on the 27th the sanitary corps under my command was given a definite organization. Four mosquito sections had been formed with an acting assistant surgeon in charge of each, and Passed Assistant Surgeon von Ezdorf given general supervision over the entire squad. Each section consisted of about 8 men, one of whom was a carpenter and another was designated as foreman and had charge of the material. Each section was supplied with a cart containing all the material necessary for the work, to wit, sulphur and pyrethrum powder in sufficient quantity, 25 pots, 25 pans, 5-gallon can wood alcohol, roll of paper, shears, knives, bucket of paste, brushes, brooms, wall brushes, mosquito netting, a number of strips of laths, nails, hatchet, saw, ready-made screen doors and windows, ladder, 5-gallon can kerosene oil.

Within a short time the above system was somewhat modified with the object of gaining time and effectiveness. The carpenters were separated from the general disinfecting sections and formed at first into two, and later into three, "screening" sections. These were composed each of two or three carpenters, supplied with a wagon, carrying tools, lumber, mosquito bars and mosquito netting. The modus operandi was then as follows: Immediately on a case (whether suspicious or positive) being reported to us from the State board of health or anyone having authority to do so, a screening section was at once sent out and the infected house "screened." This "screening" varied according to circumstances. Unnecessary doors and windows were closed tight. One window and a door of the patient's room were left open for ventilation and to admit those caring for him, and both of these fitted with screens. Often the conditions did not admit of this. The shacks or "jacals" of the poorer classes consisted of but one room with innumerable cracks and openings in the walls and rooms. Screening was impracticable here and the patient was placed under a mosquito bar. Toward the end of the epidemic I had a portable mosquito house built, covered with wire gauze and with double doors, which was applicable to such cases. The patient being thus isolated and rendered as safe as possible against propagating the disease by infecting the mosquito, the disinfecting section would come along and disinfect the premises and surrounding houses to kill the insects already infected. It was the duty also of the disinfecting section to pour oil in all cisterns, barrels, or other receptacles of stagnant waters found on the premises disinfected.

PROCESS OF DISINFECTION.

The details of the process were as follows: The room or house was made mosquito tight. To accomplish this all doors and windows were closed. Paper was then cut into strips and pasted over all cracks or openings through which mosquitoes might escape; the chimney was made secure.

In many cases houses were in such bad condition that they had to be almost completely papered over, both inside and out, and large, unprotected openings covered entirely with sheets of paper. In the meantime the pots were being filled with sulphur or pyrethrum, as the case might demand, and placed in position on pans filled with water. These water pans served a double purpose: To prevent danger from fire and for the purpose of collecting mosquitoes, for expe-

rience had shown that after disinfection nearly all the dead mosquitoes within the room were found in these pans.

The plan used in Habana to facilitate the gathering of the mosquito was employed at first; that is, to place a moist piece of paper in front of a window or wherever light might enter, with the object that after disinfection the majority of the dead or stunned insects would be found on this paper. This plan was based on the supposition that the mosquito sought the light and fell upon the moist paper and adhered to it. This method was discontinued when experience showed us that what attracted the mosquito during the process of asphyxiation was the water and not the light, for they were invariably found in the water pans even when these were in dark corners.

The pots and pans being in position, about 50 cubic centimeters of alcohol were poured on the sulphur or pyrethrum, as the case might be, and the contents ignited. Then without loss of time the disinfectors would retire, closing the last door of exit and pasting paper over any cracks that might be found in the same. When the house admitted of it all rooms except that of the patient were first disinfected, and he was then removed to one of the disinfected rooms duly protected from mosquitoes, so as to admit of the disinfection of the room occupied by him. A great number of the houses or "jacals" consisted of but one apartment, in which case the patient was removed, temporarily, under a tent during the process of disinfection. The latter plan was inapplicable in cold or bad weather, and then it was necessary to wait until circumstances would admit of disinfection, keeping the patient screened in the meantime.

For the purposes of mosquito disinfection sulphur was burned in the proportion of 4 pounds to the 1,000 cubic feet with four hours' exposure; pyrethrum 6 pounds to the 1,000 cubic feet and 6 hours' exposure.

On the termination of the disinfection the house was opened and the floors, walls, furniture, etc., carefully swept for the purpose of collecting all asphyxiated mosquitoes and immediately incinerating them. When pyrethrum was used as a disinfectant this operation was done with scrupulous care, when using sulphur it was not so necessary, as the insects were always found dead. As before stated, the great majority of the insects were found in the water pans beneath the pots.

There is no question but that sulphur is the best agent for mosquito disinfection. It is certain in its effects, and during the short exposure necessary to kill the mosquito little or no harm is done to fabrics or other articles usually injured in this process when the exposure is of longer duration. Sulphur was our main reliance, although pyrethrum was used where any possibility of damage was to be apprehended. Of the large number of houses disinfected—2,952—there was not a single case of well-founded complaint of appreciable injury caused by the process of disinfection.

The above-described plan was adhered to until the end of the epidemic, with the modification that the duties of oiling cisterns, barrels, and receptacles assumed such proportions and were of such paramount importance that they were in great part taken away from the disinfecting sections and turned over to an independent section. The former, however, always carried a supply of oil and were ordered to inspect and oil all standing water not previously oiled.

The importance of destroying all breeding places for mosquitoes was apparent from the beginning of the campaign, and the disinfecting sections were duly instructed as to their duties in that respect. But of course these only reached premises that had been reported infected and their immediate surroundings.

It had been arranged that the State and city health authorities would undertake a general sanitary inspection and oiling of all water containers. This was carried out on a small scale for a couple of weeks, but it soon became apparent that the work was not thorough and therefore not effective. This was due apparently to lack of funds.

Deeming the destruction of breeding places for the mosquito of the utmost importance, I suggested to Health Officer Tabor that I undertake the work. To this he assented very willingly, offering to aid us in every way in his power to carry out our designs. Doctor Tabor's aid was very effective in procuring a large quantity of crude oil and in enforcing a strict quarantine against those who refused to allow us to proceed with our work. So that on the 9th of October an oiling section was organized and set to work. This section was put in charge of Acting Assistant Surgeon Frick, with a wagon carrying the necessary material. Subsequently it was divided into two sections, one attending to the sprinkling of streets, pools, ponds, and other large bodies of standing water, the

other looking after water barrels, cisterns, pails, tin cans, and all other water containers found in the neighborhood of houses.

Naturally much opposition arose against the oiling of water barrels, especially among the ignorant classes, who were led to believe that our object was to poison the water. On several occasions this opposition assumed serious and menacing proportions, so much so that the lives of the officers and men engaged in the work were threatened. To obviate this difficulty it was decided to put wooden faucets in the barrels of drinking water, so that the water might be drawn from below free from oil contamination. The "oiling section" was duly supplied with these faucets, with instructions to apply them to all barrels containing water for drinking purposes. This measure was very effective in allaying irritation and averting trouble with the people. It greatly facilitated the work and made it more effective, although there were always some who objected violently against any interference on our part with their water barrels.

Within a short time the "oiling section," under its efficient chief, became so apt in its duties that the entire city could be inspected and oiled in five or six days, so that within that time every water container and other deposits of standing water was inspected and treated, making it impossible for the mosquito larvæ to arrive at maturity. During the first tour of the town 3,500 barrels, without including other containers, were oiled.

I consider this as one of the most important features in the campaign against yellow fever at Laredo, and too much praise can not be given Doctor Frick for the energy and intelligence with which he handled every detail of the work committed to him. The results were so gratifying that when Assistant Surgeon Goldberger arrived in Laredo November 21, under orders from the Bureau to secure specimens of larvæ of the *Stegomyia fasciata*, he found it impossible to secure a sufficient number for the purposes contemplated. A thorough inspection of the town on three or four successive days yielded but about 100 mosquito larvæ half of which were anopheles.

The following table gives a synopsis of the immense amount of work done by the oiling brigade from October 9 to November 30, both dates inclusive. The entire town was gone over six times.

Synopsis of work done by oiling brigade.

Containers oiled	22, 458
Excavations oiled.....	2, 582
Tanks and wells oiled.....	499
Premises oiled.....	3, 134
Premises inspected.....	10, 640
Faucets applied to water barrels.....	1, 075
City blocks sprinkled with oil.....	2, 134

In addition, about 70,000 square feet of standing water were oiled in neighboring "arroyos" or creeks and on the streets after rainstorms.

As the epidemic increased the number of disinfecting sections was increased by the addition of two large ones, composed of 10 men each with an experienced foreman and the necessary outfit. It had become evident that the Habana methods of controlling yellow fever were not quite applicable to Laredo under existing circumstances, and it was determined to undertake a systematic and complete disinfection of the entire city. These two sections were started at the southeast and southwest extremities of the town, working toward each other and at the same time pushing north. Every house and building was included in this disinfection—schools, public buildings, and churches—no matter whether or not they had been previously disinfected. By December 1 two-thirds of the town had been covered by this general disinfection, including its most thickly populated portions. This work was continued after December 1 by Acting Assistant Surgeon Frick and completed under his direction.

From September 26 to November 30, both dates inclusive, 2,952 houses and buildings, containing 10,045 rooms, were disinfected. Repetitions are included in the above figures, quite a number of houses having been disinfected more than once, a few as many as three or four times.

The following table gives a résumé of the work of disinfection:

Houses or rooms screened	304
Patients screened under mosquito bars.....	115
Houses disinfected.....	2, 952
Rooms disinfected	10, 045

It is estimated that there are 2,963 houses in Laredo. This figure was obtained after careful investigation.

Of the above number 580, or 19.54 per cent, were infected—in other words, one house in five. These figures show that the infection was well generalized. The work of screening and disinfection was under the immediate supervision of Passed Assistant Surgeon Von Ezdorf and was admirably directed by him.

Such then, in brief, was the plan of campaign adopted to stamp out the epidemic.

To recapitulate: (a) The isolation of the patient by screening; (b) the fumigation of the infected premises for the purpose of killing infected and other mosquitoes; (c) to prevent the propagation of the *Stegomyia fasciata* by covering all stagnant water with oil, killing the larvæ, and preventing the laying of eggs; (d) the general and systematic disinfection of the entire city.

It may be well now to discuss the difficulties encountered in the progress of the work and which interfered materially with its effectiveness. These may be discussed under four heads: (1) Lack of sufficient authority to carry out necessary sanitary measures; (2) ignorance of the people; (3) the possibility of the introduction of infected mosquitoes from Neuvo Laredo, across the Rio Grande; (4) unfavorable weather.

The first two items being closely associated will be taken up together.

(1) Lack of sufficient authority to carry out sanitary measures and (2) ignorance of the people.

When yellow fever was declared to be present in Laredo and the town quarantined, a large part of the people, particularly the ignorant class, were filled with the idea that the doctors and the authorities were in a conspiracy against them, and that the main object they had in view was the making of money. They went even further, and it was quite generally believed that the physicians poisoned their patients to get rid of them as soon as possible and in this summary manner end the epidemic. Patients not only refused treatment, but resisted frequently to permit the use of the clinical thermometer, thinking that this too was poisoned. This was certainly an amazing condition of affairs, and it was difficult to believe that such perversion and crass ignorance could exist within the confines of the Republic. These extravagant opinions were supported by one or two irresponsible sheets printed in Laredo.

Under such circumstances it is not to be wondered at that all possible means were resorted to to hide cases from the physicians and inspectors. It frequently happened that when a doctor reached a house where some one had been reported sick no patient was found, the sick one having been removed to other quarters or else the house would be found empty and closed, the entire family having moved away.

Patients very ill with yellow fever have been known to get out of bed and hide in a privy or other outbuilding when informed that a doctor or inspector was approaching. And, moreover, they usually had some member of the family on guard to give the required information.

A house-to-house inspection was commenced under the direction of the State health officer September 29. This was later on supplemented by volunteer inspectors named by the mayor. The results were not satisfactory. This is not to be wondered at, remembering the difficulties mentioned above. Finally it became so apparent that cases were being hidden and that this was one of the principal reasons why the epidemic could not be controlled that I withdrew the four acting assistant surgeons in charge of disinfecting work, and, appointing an individual one, started them on house-to-house inspection on November 9. They worked with good results for several days, when the better class of citizens becoming interested in the matter offered their services as inspectors. These were put to work under the direction of a committee consisting of the sheriff, the county clerk, the State health officer, the representative of the Public Health and Marine-Hospital Service, and several prominent citizens. The results of this intelligent volunteer inspection force, working in conjunction with and under the direction of the sanitary officers, were excellent. In a little over two weeks, with the aid of favorable weather, the epidemic was entirely under control. Too much praise can not be given these citizens for the disinterested and effective work done by them, and it is to be regretted that their services were not offered at an earlier date.

In organizing the plan of campaign against the epidemic, one of the first things that occurred to the writer was the establishment of a hospital. Without one the entire system appeared faulty and ineffective. This was especially the case

in a town, such as Laredo has been described to be, with a very large and ignorant proletariat living in houses which scarcely merited the name and under hygienic conditions which must be seen to be believed. Here was a large part of the population unable to care for its sick, and among whom the problem of mosquito disinfection was surmounted with difficulties which were at times insurmountable.

How was a miserable "jacal" consisting of but one room 8 or 10 feet square and about 6 or 8 feet in height made up of boards loosely thrown together or tin cans or old sheets of tin or iron and other inconceivable materials, with cracks and open spaces everywhere—how, I say, could such a structure be effectively disinfected?

In many cases the patient had to be removed to the shelter of a tent and the house papered inside and out before disinfection could be attempted. But in a structure such as has been described the removal of the patient and the very process of making it fit for mosquito disinfection defeated in a measure the object in view, for the movements of the men of the disinfecting gang within a space so reduced would be sufficient to drive out the mosquitoes within the inclosure.

The attempt to screen a patient under such circumstances was equally difficult and naturally was not as effective as could have been wished.

A mosquito-proof hospital, where such patients could have been removed at once, was therefore of the greatest importance. But here again we were confronted with the ignorance of the people and the lack of authority to enforce sanitary measures. After consultation with the mayor and other prominent citizens I was dissuaded from carrying out my intentions respecting the establishment of a hospital. It was impressed upon me that the very class of cases I wished to remove to a hospital would absolutely refuse to go, and that there was no authority to force them to do so. My experience with the people soon showed me that this was true, and the plan to establish a hospital, while ever present to my mind, was finally abandoned. However, I believe it was an error not to have carried out my original intention, and, under similar circumstances and with my experience at Laredo, I would insist on a hospital, well appointed and well managed, hoping in a short time by a demonstration of its merits to overcome the prejudice against it.

The lack of authority to carry out sanitary measures was, as may be seen from what has gone before, the most important obstacle to our success in dominating the epidemic. It interfered with the house-to-house inspection, with the oiling of barrels and cisterns, with the screening and disinfection of houses and premises, and prevented the establishment of a yellow-fever hospital. Doubtless the necessary authority could have been assumed, legally or otherwise (as had been done before in Laredo during a smallpox epidemic in 1895). There is every reason to suppose that, as in the instance cited above, this would have led to some bloodshed, but the situation would have been controlled. There was no one in authority, however, ready to take the necessary risk, and the sheriff of Webb County, who could have been of great assistance in such a case, was lukewarm in his efforts to aid us. On the other hand the mayor and the city council gave us their assistance to the limit of their powers. The mayor was always ready to follow or enforce any suggestions that were offered. Unfortunately his powers were limited. The city council at my suggestion passed an ordinance October 31 (which became effective ten days later) giving quarantine and sanitary officers, whether Federal, State, or county, authority to inspect and carry out all necessary sanitary measures within the city, imposing certain penalties upon those who resisted. It is the first time to my knowledge that such powers have been given to Federal officers under similar circumstances. Copy of the ordinance is herewith appended, marked "Exhibit D." This measure of the city council was of considerable moral and practical assistance in the work we had in hand. Unfortunately it came too late, and, moreover, it is doubtful if the city had sufficient police power to make it effective.

The Laredo epidemic has shown conclusively to my mind that results such as were obtained in Habana in the suppression of yellow fever during the American occupation can not be obtained elsewhere, where the disease is widely spread, without the undisputed authority and the means that were at the command of the government of intervention in Cuba. These powers in reality amounted to martial law. In Habana, too, there was no tendency to hide cases, and Spanish emigrants, who furnished the majority of the cases, were promptly taken by their friends to a "quinta de salud" or private hospital, connected with beneficial aid societies, of which there are several in Habana, and in this way

promptly came under the observation of the authorities, so that proper precaution could be taken. This simplified matters very much.

I believe that under martial law the Laredo epidemic could have been controlled within three or four weeks after the disease had been officially declared, September 25, even though at that time it had already invaded many parts of the town. When one considers what this would have meant to Laredo in the saving of life, the conservation of commercial and railroad interests, and in addition the benefits to the surrounding districts, it becomes a serious question whether under such circumstances the establishment of martial law or something equivalent to it should not be the very first step to be taken in the suppression of an outbreak of yellow fever or, in fact, of any other of the epidemic diseases.

In most epidemics the hardships endured by the people, the loss of life, the interruption of commerce, causing heavy financial losses, all are greater than in the case of riots or other disturbances of the peace for which ordinarily martial law is imposed. Such being the case, it is not clear why this efficient means of combating an epidemic should not be more strongly recommended, nor why so much opposition should be aroused against it when it is suggested.

Now, let us inquire into the third difficulty which presented itself to our efforts to control the epidemic; that is, the proximity of Nuevo Laredo and the possibility of mosquitoes being carried by the wind across the Rio Grande.

In Nuevo Laredo no practical or general mosquito disinfection was done until late in the epidemic, when something was attempted in that line. Previous to that but few houses had been disinfected, for those only were treated where a recognized case of yellow fever had occurred, and inasmuch as the Mexican experts refused or could not recognize yellow fever in its mild or even semi-severe form, calling all such cases malaria, the large majority of infected houses were unattended to.

The number of infected *Stegomyia* must therefore have been very great. During the summer and fall, and until such time as the northers begin to blow with frequency, the prevailing wind is from the southeast and south; that is, directly across the river from Nuevo Laredo toward Laredo. The wind at times blows with considerable force. As already stated, the width of the river is about 1,500 feet, and there is a long, narrow island, covered in part with thick brush, situated near the American side. The distance from the Mexican bank of the river to this island is about 900 feet, the width of the island 400 feet, and from it to the American side 200 feet.

Under these circumstances I can readily believe that the *Stegomyia* might easily be carried across the river by the wind.

Knowing that the *Stegomyia* is a house mosquito and therefore usually is in a position to obtain shelter against the wind, I do not consider that they would be carried over in any great numbers, but it is very probable that quite a few were introduced into Laredo, Tex., in that way.

The authorities of Nuevo Laredo were urged to take more effective sanitary measures, and, in fact, a good deal of work was accomplished under the direction of the active and efficient mayor and health officer, Doctor de le Garza, but for lack of funds it was far from being what it should have been. The Mexican authorities, indeed, had the advantage of power, which we lacked. They were not confronted by the good(?) citizen insisting that "his house was his castle" and that he would shoot the first one who attempted an entrance, but, on the other hand, they lacked the "sinews of war" to make their power effective.

As has been said, the two Laredos are practically one, and the epidemic could have been handled much more effectively had it been possible to so consider them for epidemic purposes.

The necessary arrangements should certainly be made with the countries contiguous to the United States, so that under such circumstances as existed in Laredo sanitary measures against an epidemic could be taken conjointly by the nations interested.

To the drawbacks already mentioned may be added another, the weather. With the exception of two or three comparatively cool days in the latter half of October, the weather was unseasonably warm and wet until late in November. This naturally made our war against the mosquito all the more difficult.

The accompanying chart shows the number of cases and deaths daily, in connection with the daily mean temperature. It will be noted that there is no very marked relationship between the two.

One thousand and fifty cases of yellow fever were reported up to November 30, when the epidemic was declared over and quarantine against Laredo raised.

Only a few isolated cases were reported after that date. These 1,050 cases occurred in 580 houses, the patients being screened and the houses disinfected.

Of the above number of cases, 103, or 9.80 per cent, died. This mortality is about the same as that in recent epidemics. While I believe that quite a number of the cases reported as such were not yellow fever, there is no doubt that many cases of mild yellow fever escaped the inspectors and were not reported. These two sets of cases probably balance each other, and the figures given may be considered close to the actual truth.

The following table is of interest as showing the difference in mortality among the Americans and Mexicans, and also emphasizes the difficulty we had to contend with in reaching the latter class:

Yellow-fever statistics, Laredo, Tex., from September 25 to November 30.

Number of cases, Mexicans	691
Number of cases, Americans	359
Total	1,050
Number of deaths, Mexicans	95
Number of deaths, Americans	8
Total	103
Death rate:	
Mexican	per cent. 13.75
American	do 2.23
Total death rate	do 9.80

Fifty-five Mexicans were discovered dead or in a dying condition.

It is estimated by Dr. Juan F. de la Garza, of Nuevo Laredo, a rather unwilling witness, that there occurred in that town during the epidemic from 2,500 to 3,000 cases of yellow fever. From personal observation and from information obtained from reliable citizens of the place I am inclined to agree with him.

Estimating the population of Nuevo Laredo at the time of the epidemic at 6,000 souls, we deduce that nearly or fully 50 per cent of the inhabitants were attacked by the disease.

On the other hand, in Laredo, Tex., with an estimated population of 10,000 souls during the epidemic, there were only 1,050 cases, or about 10 per cent of the inhabitants thereof. I consider this an excellent showing and sufficient compensation for the labor and expense incurred in fighting the epidemic. To this should be added the steps taken and subsequently carried out for completing post-epidemic disinfection of the city and surrounding districts, with the object of preventing infected mosquitoes and a few isolated cases keeping up the disease during the winter months and giving rise to a fresh outbreak in the spring. For, as a result of our efforts, Laredo can not be considered as an immune town, such as I believe Nuevo Laredo to be. In Nuevo Laredo the epidemic had full sway, and all those naturally subject to the disease I think had it, whereas in Laredo, Tex., as a result of the sanitary measures taken, there still remains a very large majority of the inhabitants who are liable to contract and spread the disease.

The above figures also compare very favorably with those of the yellow-fever epidemic of 1899 at Key West, where a total of 1,350 cases were reported and 68 deaths.

I have no way of knowing what the estimated population of Key West may have been during the epidemic, but judge it would not have been over 12,000. It is probable that of those who remained in the city one-half were immunes, through previous epidemics or on account of their Cuban birth, having been immunized by an attack of the disease in childhood. So that, with very much less available nonimmune material in Key West, the number of cases was considerably greater than in Laredo. This shows clearly the controlling influence of mosquito disinfection.

The quarantine against Laredo by the State of Texas was officially raised November 30, a proclamation to that effect being issued by the governor on that date. Copy of the proclamation is herewith appended, marked "Exhibit E."

No place appears more appropriate than this to mention the eminent services rendered by our distinguished officer and esteemed friend, the late Surg. R. D. Murray, late of the Public Health and Marine-

Hospital Service and the veteran of many campaigns, both of arms and of sanitation. He came to Laredo under special orders from the Bureau and united himself with us, joining in our labors, assisting us with his counsel and advice. His special duty was to act as expert diagnostician and ferret out and report cases of yellow fever. He supplemented this by treating a large number of cases, especially of the poorer classes.

The number of physicians in Laredo was limited and often insufficient for the calls made upon them, so that all the officers of the Service were at times occupied in the treatment of cases, work which was foreign to their duties, but which had to be done under stress of circumstances.

Doctor Murray did by far the greatest amount of this volunteer work. The effects of his kind treatment of the Mexicans, remaining night after night at their bedsides in the hope of saving some poor and abandoned patient, was most salutary on the minds of these people and was rapidly breaking down their antipathy and suspicion against the American doctors, when destiny called him away from the scene of his labors and, through a deplorable runaway accident on November 15, while on his way to visit a case, he met with injuries which caused his death a week later, on November 22. The demonstrations of grief on this occasion from his fellow-officers and the people of Laredo were great indeed, but not more than a fitting tribute to the great-hearted and generous soul that had passed away.

The tragic death of Surgeon Murray will always leave a special feeling of sadness in connection with the epidemic of 1903 at Laredo. He died in full armor, in the discharge of his duties as an officer, a gentleman, and a physician.

Laredo was our principal field of operations, and we were fully occupied therein, but, notwithstanding this, we were obliged at times to devote some of our attention to near-by towns. Of these Minera and Cannel furnished some interesting data and will be now considered.

Minera is a mining camp situated about 25 miles northwest of Laredo and communicating with it by means of the Rio Grande and Eagle Pass Railroad, one mixed train running daily, except Sundays, over this road. It has a population of about 1,100 souls, consisting of miners and their families, almost all Mexicans. The majority live in houses constructed and belonging to the Rio Grande Coal Company, but quite a number inhabit miserable huts of the worst kind, built by themselves. The camp is situated close to the banks of the Rio Grande, and on the opposite side of the river is the Mexican town of Colombia, with a population of about 1,500.

Suspicious cases of illness having been reported from Minera, Surg. R. D. Murray visited the place October 1 and found 7 cases and 1 death from yellow fever.

Acting Assistant Surgeon Dinwiddie was ordered to Minera on October 10, but, on account of some misunderstanding with the superintendent of the mines, he accomplished nothing and returned to Laredo on the 12th. Doctor Dinwiddie reported on his return that there had been 61 cases and 1 death up to October 12, over two-thirds of which number had been reported within the last forty-eight hours. Unavoidable circumstances made it impossible to renew the attack against the Minera epidemic before October 18, when the pharmacist and special disbursing agent of the Public Health and Marine-Hospital Service, F. S. Goodman, was sent to Minera with a disinfecting gang and a complete outfit, with instructions to disinfect every house in the place and to cover all standing water with oil. It should be stated here that Pharmacist Goodman has a medical degree and has had considerable experience in disinfection. He was accompanied by Doctor Thompson, the Texas State health representative, and Mr. George W. Derby, assistant general manager of the Rio Grande Coal Company, both of which gentlemen rendered efficient assistance in carrying out the proposed sanitary measures.

DISINFECTION OF MINERA.

The mission of Pharmacist Goodman was executed with extraordinary vigor, thoroughness, and success. His interesting report upon the subject is herewith appended.

[Report of Pharmacist Goodman.]

PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Laredo, Tex., October 23, 1903.

SIR: In compliance with orders contained in your letter of October 18, 1903, directing me to proceed to Minera, Tex., for the purpose of disinfecting that

place, I have the honor to report that I left this city for Minera on the morning of the 19th instant, in company with Doctor Thompson, the Texas State health representative, and Mr. George W. Derby, assistant general manager of the Rio Grande Coal Company, reaching our destination about noon of the same date.

Minera is located on the Rio Grande and Eagle Pass Railway and is owned by the Rio Grande Coal Company. It is situated 26 miles from Laredo and inhabited by a few Americans, but mostly by Mexicans.

The dwellings occupied by the miners may be arranged under two classes—1-story wooden frames, and shacks known as "jacals." Of the former class many are located in a hollow, while others occupy a more elevated position on the reservation. The shack class are of rude construction, unsanitary, and, being consistent with the occupants' habits and chosen mode of living, are dirty, poorly ventilated, and offer sufficient inducements for the propagation and abode of the mosquito.

The first case of yellow fever in this camp (as reported) occurred during the month of September, patient having arrived a few days previous to his illness from Colombia, Mexico. The infection seems to have been and is now confined to the lower section of the camp, as several deaths and many cases (number not known) have been reported. In the upper section of the camp the health of the miners appears to be good.

"ARROYO."

On the border of the reservation, and separating Camp Minera from Camp Cannell, is a standing stream of water known as the "arroyo." This stream extends in a northeasterly and westerly direction, with a width of 10 to 40 feet; depth, 1 to 3 feet, with a muddy bottom, and length about 8,000 feet. It has undoubtedly been a menace to the health of both camps for some time on account of the standing water, and more especially conducive to the propagation of mosquitoes. Along the shores swarms of these insects were circulating, and in some places, notably where large exposed rocks were found embedded in the mire, were they especially troublesome. The process of oiling this stream, while performed under difficulties, was successfully accomplished.

FUMIGATION OF HOUSES.

The fumigation of miners' houses was carried out in both the infected and noninfected districts of the camp. Much trouble was experienced with some houses, especially shacks, to prepare them properly for fumigation, on account of their construction, in which cases an excess of sulphur was used.

WATER BARRELS.

All barrels and water containers were thoroughly oiled, and one spigot was furnished to each house where desired by the occupant.

OILING OF PREMISES.

A close examination of several dwellings revealed the existence of small pools of standing water in the rear of houses and adjacent to the kitchens. These places were thoroughly oiled.

A summary of the entire work performed during my stay at Minera is here-with appended.

In conclusion, I desire to express my sincere thanks to Mr. George W. Derby, assistant general manager of the Rio Grande Coal Company; Doctor Thompson, the Texas State health representative, and Mr. D. T. Roy, superintendent of the coal company at Minera, for their many acts of kindness and valuable assistance rendered me in the execution of this work.

Respectfully,

F. S. GOODMAN,

Pharmacist, Public Health and Marine-Hospital Service.

Surg. G. M. GUTERAS,

Medical Officer in Command, Laredo, Tex.

Detail of work performed at Minera, Tex.

Barrels oiled.....	296
Containers oiled.....	75
Excavations oiled.....	20
Premises oiled.....	48
Houses fumigated.....	192
Arroyo oiled.....	feet... 8,000
Spigots furnished water barrels.....	147

The history of the Minera epidemic is extremely interesting and shows conclusively the efficiency of mosquito disinfection in controlling and stamping out an epidemic. Up to October 20 there had occurred in Minera, a town or mining camp of about 1,100 inhabitants, 98 cases and 7 deaths from yellow fever, showing that the disease was generalized. A thorough disinfection of the village done under extreme pressure and within the remarkably short time of something less than three days was concluded on the 21st of October.

On that day 2 new cases and 1 death were reported; 1 case and 1 death on October 22, and 2 cases on October 23. From the latter date not a single case was reported until October 30, an interval of more than six days, when 1 case was reported; then another interval of five days until November 6, when 3 cases were reported, after which date a few cases were reported from time to time until the advent of cold weather, aided by the efforts of the officers of the coal company to stem the recrudescence of the disease, following our methods, finally stamped it out.

Considering the incubation period of yellow fever as from five to six days, the above figures show conclusively that the mosquito disinfection of Minera was effective in stamping out the disease. Whether the second outbreak was due to importation from without or to some infected mosquito that had escaped destruction during the disinfection of the camp is uncertain, but in any case it is clear that the disease had been practically exterminated and that if reasonable vigilance had been exercised by the officers of the coal company, or we had been in a position to devote our attention to the work, the disease would never have been permitted to again obtain any headway. As it is, subsequently to the general disinfection of Minera, on October 21, only 36 new cases and 2 deaths occurred up to December 1, without counting the 5 cases and 2 deaths which were reported October 21, 22, and 23, and which it is clear had been infected before the process of disinfection had been concluded.

It is indeed more probable that the second infection was introduced from without, as the Mexican town of Colombia, on the other side of the Rio Grande, was at that time ravaged with yellow fever, and in spite of the guards maintained along the river by the Service, the State, and the coal company itself, it is well known that there was illicit communication between the two villages.

Cannel is a coal-mining camp similar in all respects to Minera and having about the same population. It is located 2 or 3 miles eastward of Minera and separated by the Arroyo Santo Tomas. A suspicious case was reported there October 22 and was at once seen by State Quarantine Officer McKnight and myself, and as it presented all the clinical symptoms of yellow fever there was no difficulty in arriving at a diagnosis. No other cases were found at the time. The camp employed an intelligent physician, Doctor Moore, to look after its sick, and as Mr. Jackson, the manager of the coal company, was willing to undertake the work of disinfection under the supervision of Doctor Moore the necessary instructions as to screening and fumigating were given and evidently carried out, for not a new case appeared until October 31, a period of nine days. From this time on cases appeared occasionally, but it is evident that a fair amount of sanitary precautions were taken by Doctor Moore and Mr. Jackson to prevent the spread of the disease, as only 27 cases in all occurred up to December 1.

The press of work in Laredo made it impossible to give the personal attention of officers of the Service to Cannel or to Minera during the second outbreak, especially as these camps were not considered a great menace to the surrounding country, as their only railroad connection was with Laredo and they were pretty well removed from other centers of population.

CONCLUSIONS.

1. The results obtained through the efforts to combat the yellow fever epidemic at Laredo go to demonstrate that the mosquito (*Stegomyia fasciata*) is the only means of transmitting yellow fever and that the efforts to destroy the same were productive of much good, greatly limiting the number of cases.

2. The measures taken to prevent the reproduction of the *Stegomyia fasciata* or other mosquitoes by oiling all water containers and deposits of stagnant water were completely successful.

3. It was demonstrated that to control an epidemic of yellow fever which has gained considerable headway (and such is the condition usually met with) it is necessary to have absolute power to enforce sanitary measures until such time as the people are educated up to the importance of such measures.

4. Inasmuch as the *Stegomyia fasciata* can only become infected by biting the patient during the first three days of the disease it is of vital importance that cases of fever be reported at the earliest possible moment so that they may be screened and the mosquito prevented from biting them. Such being the case, an efficient system of inspection is necessary, especially where there is a tendency to hide cases.

5. It is impossible to obtain good results without a mosquito-proof yellow-fever hospital.

6. The difficulties of handling an epidemic are increased when such outbreak occurs on the frontier. Arrangements should, therefore, be entered into by treaty with contiguous foreign countries, so that under such circumstances sanitary measures may be carried out jointly by the countries interested for mutual protection.

7. Insistent and continued efforts should be made through the public press and other available means to educate the people within the sphere of influence of the *Stegomyia fasciata*, so that they will learn to protect themselves against the invasion or possible spread of yellow fever in their midst by destroying the means for the propagation of said mosquito, and by protecting themselves against the mosquito by efficient screening.

Above all, to eradicate the existing fear in the medical profession, as well as among the laity, of declaring the existence of yellow fever. If the first case presenting the slightest suspicious symptoms of that disease were promptly made public and the proper modern precautions taken there would be no danger of the disease spreading. In fact, the public should be taught to acknowledge the existence of yellow fever in their midst with the same equanimity as in the case of measles or scarlatina.

8. The effort to control the epidemic at Minera was decidedly successful, and would have been entirely so if we could have given it undivided attention. The results at Minera demonstrate almost as clearly as those in Habana that the mosquito is the only means of conveying yellow fever.

Finally, it is a pleasure to state that our relations with Dr. R. G. Tabor, State health officer of the State of Texas, and his staff, as also the city and county authorities, were most cordial and happy. This accord was of the greatest importance in obtaining the best possible results from our mutual labors. While Doctor Tabor and myself may have differed slightly as to whether or not the *Stegomyia fasciata* was the only means of transmitting yellow fever, we did not allow this difference of opinion to interfere in any way with the work in which we were all deeply interested.

As to my personal staff, several of whom I have already mentioned in the body of this report, I have to say that one and all complied faithfully with their duties, and to them is due in large part such success as we may have achieved.

Respectfully,

G. M. GUITERAS, *Surgeon.*

The SURGEON-GENERAL.

[Inclosures.]

EXHIBIT A.—*Quarantine proclamation.*

LAREDO, TEX., *September 26, 1903.*

Whereas yellow fever now exists in the city of Laredo, I, George R. Tabor, State health officer of Texas, assume control of all matters pertaining to quarantine and by virtue of the authority vested in me by the laws of this State do hereby proclaim that quarantine is this day established against the city of Laredo by the State of Texas and shall continue until closed by proclamation of the governor.

Said quarantine shall apply to all persons, freight, baggage, express, mail, or other matter originating in the city of Laredo, and none of the above will be permitted to leave the corporate limits of said city of Laredo for points in Texas except health officials of the United States and the State of Texas.

All citizens are requested to promptly report to the health authorities cases of sickness of any character. No pest house will be established and persons sick will be permitted to remain in their homes for treatment.

Immediate sanitation of the city will begin under the immediate supervision of an officer of the United States Public Health Service and all persons are solicited to give him prompt assistance and support. We do not apprehend a continuation of yellow fever here if proper sanitary precautions are observed.

All officials and citizens are solicited to assist the health authorities in the execution of quarantine regulations. Competent officers will be in charge until the disease is stamped out.

GEORGE R. TABOR,
State Health Officer of Texas.

EXHIBIT B.—Case of Manuel Porras, died at Monterey, Mexico, June 24, 1903.

Patient had been suffering with hemorrhoids for some months and was to be operated upon; but before being prepared for operation fell ill, complaining of aches all over the body. Illness lasted seven days, patient suffering from attacks of syncope, vomiting yellowish green and unable to retain anything on his stomach; kept repeating that the "next" attack would be the last; passed hardly any urine until a few moments before death. Physician told patient he would get well unless disease was attended by complications; but after death said he knew on third day that there was no hope. Physician was always in a hurry to leave, and not sit down; apparently avoided going near patient. Chill, dizziness. Nose and mouth hemorrhages, but no black vomit observed. After death, the whole body, eyes, finger nails were yellow. Physician gave directions to inter body as soon as possible; certificate of death read "ictericia grave." Patient had been employed at the Central Railroad, which enters Monterey from Tampico.

EXHIBIT D.—An ordinance for the prevention and suppression of yellow fever and other contagious and infectious diseases, having the mosquito as one, if not the only, means of transmitting such disease from person to person.

Be it ordained by the city council of the city of Laredo:

SECTION 1. That all wells, cisterns, tanks, reservoirs, barrels, tubs, vats, pools, lakes, ponds, puddles, and other receptacles holding and containing water within the incorporated limits of the city of Laredo, other than those in which the water therein contained is coated and kept coated with oil, are hereby declared public nuisances.

SEC. 2. Any person, firm, company, or corporation having any of the water receptacles mentioned in section 1 of this ordinance on his, her, their, or its place, premises, or upon any lot or block of land under his, her, their, or its control within the incorporated limits of said city, which contains water, who shall fail or refuse to cover the surface of such water with oil and keep the same so covered with oil, shall be deemed guilty of a nuisance, and upon conviction shall be fined in any sum not less than \$5 nor more than \$25, and each day's refusal, neglect, or failure shall constitute a separate offense.

SEC. 3. It is hereby made the duty of the sanitary inspector of said city, together with such assistant inspectors as he may appoint, to enter the house or premises of any inhabitant of said city and inspect and disinfect the same, and for this purpose may use all such force as may be necessary to effect such entry, inspection, and disinfection.

SEC. 4. The city, county, and State health physicians and the several physicians of the Public Health and Marine-Hospital Service of the United States, and their aids and assistants, while engaged in the treatment and suppression of any contagious or infectious disease in said city, are hereby vested with the same powers and authority delegated to the sanitary inspector of said city and his assistants by the third section of this ordinance.

SEC. 5. Any person, firm, company, or corporation who shall refuse permission to any of the officers, physicians, or their assistants mentioned in the third and fourth sections of this ordinance to inspect his, her, their, or its house or premises shall be deemed guilty of an offense and upon conviction shall be fined in any sum not less than \$5 nor more than \$25.

SEC. 6. This ordinance is cumulative to that of all other ordinances heretofore passed and now in force on the subject upon which it treats.

SEC. 7. All ordinances and parts of ordinances in conflict with the provisions of this ordinance be, and the same are hereby, repealed.

AMADOR SANCHEZ, *Mayor.*

Attest:

A. R. GARCIA, *Secretary.*

EXHIBIT E.—*Proclamation issued by Governor Lanham.*

LAREDO AWAKENS FROM HER LONG NIGHTMARE OF DEATH-DEALING DISEASE AND BUSINESS-DESTROYING EMBARGO—QUARANTINE PROCLAMATION BY THE GOVERNOR OF THE STATE OF TEXAS.

Whereas I am advised by the State health officer that quarantine against Laredo is no longer necessary, as the epidemic of yellow fever there has ended, and the temperature having fallen to 31°, which will prevent the recurrence of the disease, and as the cause has been removed by the thorough sanitary work of the United States Public Health and Marine-Hospital Service, which will be continued through the winter:

Therefore I, S. W. T. Lanham, governor of the State of Texas, do, by the authority vested in me by the laws of this State, hereby remove the quarantine proclaimed by the State health officer against said city of Laredo the 26th day of September, 1903. This proclamation to take effect at 12 o'clock noon to-day.

In testimony whereof I hereunto sign my name and cause the seal of state to be affixed at the city of Austin this 30th day of November, 1903.

S. W. T. LANHAM,
Governor of Texas.

By the Governor:

J. R. CARL, *Secretary of State.*

REPORT OF PASSED ASST. SURG. T. F. RICHARDSON FOR PERIOD DECEMBER 1, 1903, TO JUNE 30, 1904.

**PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
OFFICE OF MEDICAL OFFICER IN COMMAND,
Laredo, Tex., June 30, 1904.**

SIR: In compliance with instructions contained in Bureau letter of 30th ultimo, I have the honor to submit the following report of operations at this station for the period December 1, 1903, to June 30, 1904:

On December 2, 1903, Surgeon Gulteras was relieved by Acting Assistant Surgeon Frick, under whose direction the Service operations were conducted until March 23, 1904, when Passed Asst. Surg. T. F. Richardson assumed charge under Bureau orders.

At the date of Surgeon Gulteras's departure the force on duty at Laredo consisted of Acting Assistant Surgeons Frick, Hamilton, and Sauvignet and 40 lay employees. These were continued until December 31, 1903, when the force was reduced to 2 acting assistant surgeons and 9 employees.

Between December 1 and 31, the entire portion of the city (roughly one-half) which had not been fumigated under Surgeon Gulteras was gone over block by block, so that by the 1st day of January every house in Laredo had been treated, to kill possibly infected mosquitoes.

This systematic work was somewhat interfered with by the occurrence of suspicious and positive cases of yellow fever, of which there were 27 during December in various parts of the city, necessitating the immediate refumigation of the neighborhood in which they occurred.

On December 20 the inspection and oiling of water containers was discontinued.

After January 1, 1904, the reduced force was engaged in fumigation work in Laredo and outlying ranches within a radius of 12 to 15 miles of the city. The towns of Aguilares, Ojuelos, Cannel, Minera, and Palafox were also fumigated by the force during the months of January and February and the early part of March.

On March 3, 1904, the city council of Laredo passed the following resolution, which was transmitted to the Bureau by Acting Assistant Surgeon Frick:

"A RESOLUTION.

"Whereas it is generally believed that yellow fever exists all seasons of the year in Vera Cruz, Republic of Mexico, which point is of no great distance from Laredo, and is in daily railway communication with this city; and

"Whereas the warm season is rapidly approaching, and the quarantine heretofore established and maintained against Vera Cruz has not been of such a nature as to inspire confidence or arrest the spread of the disease; and

"Whereas the city of Laredo has in the past five years suffered so intensely from the blight of droughts and epidemics that her financial condition is strained to the limit of the constitution, and her treasury exhausted, and is therefore unable to employ the means to carry on the necessary precautions to prevent a recurrence of the yellow fever during the coming warm season: Therefore, be it

"Resolved, by the city council of the city of Laredo, Tex., That the Public Health and Marine-Hospital Service of the United States be, and it is hereby, requested to at once furnish the means and reassume the inspection, disinfection, and all means necessary for the prevention and suppression of all contagious and infectious diseases, and especially that of yellow fever, and said city does hereby pledge itself to render all moral support and legal aid to the Public Health and Marine-Hospital Service of the United States in carrying out the purposes of this resolution."

While this matter was still pending before the Bureau, on March 11, a case of yellow fever in the third day of the disease was discovered by Dr. W. E. Lowry. This case was promptly screened, and thorough fumigation of the entire neighborhood in which it occurred was done.

Again, on March 18, a case, in the fifth day, arrived in Laredo from up the Rio Grande.

The first of these cases was undoubtedly infected in one of the Laredos; the second, in all probability, at Tordillo, where he had been at work with the disinfecting gang of the Service.

On account of these cases, something over 100 houses were fumigated in Laredo, with the fortunate result that there was absolutely no spread of the disease. Fumigation was also repeated at Tordillo, with like result.

Under dates of March 18 and 21, the following telegrams were received from the Bureau:

"MARCH 18.

"Bureau is about to take action favorable to request of city council and State health officer supplying necessary water covers and mosquito nets to those unable to purchase, and will soon forward a memorandum containing suggested ordinance by the city council. House-to-house inspection should be begun immediately. Wire your plan for instituting same. * * * Authorized to nominate lay inspectors and two or three medical inspectors to assist, if needed. * * * Authorized to have cards or books printed for inspectors' reports, which should include reports on water containers.

"WYMAN."

"MARCH 21.

"Adopt following plan for house-to-house inspection. Divide city into 20 or 30 districts. Nominate and put on duty lay inspector for each district at \$1.25 per day, whose whole time shall be given to said inspection, and who shall cover his whole district each day, including Sundays. Most important duty of inspector is to ascertain cases and separate same, but at same time should report condition on water containers and other breeding places of mosquitoes. Every case of fever, from whatever cause, must be immediately reported to Service office and a mosquito bar shall be immediately placed around patient, Service furnishing same if necessary. Cases must then be seen by one of the medical inspectors. On receiving information as to necessity for covering water containers or oiling, this must be done at once, Service furnishing, if necessary, required material. This involves preparing both mosquito bars and covers for water barrels. Authority for measures outlined herein is evidently contained in recent resolutions of city council, and, it is believed, in the ordinances passed last year. Letter follows.

"WYMAN."

Accordingly, the city was divided into 25 districts, each district being assigned to a lay inspector. These inspectors were directed to report immediately to the office all sick discovered in their districts, for investigation by a medical officer. They were each also supplied with a large canteen of the best grade of refined oil, for the purpose of oiling all exposed water containers found on their beats.

Much difficulty was experienced in securing the services of satisfactory inspectors; for, while there was no lack of applicants, men who would do the work required thoroughly and without fear nor favor were not easily found.

Constant and close supervision of the inspectors' work was early found to be necessary, so much so that two medical officers have been required to give their entire time to this.

House-to-house inspection of the entire city each day was continued until April 18, after which date, no yellow fever having been discovered in the meantime, the force of inspectors was reduced to 10 men and the city divided into that number of districts.

Under this arrangement, which has continued steadily, the entire city is covered in two and a half to three days; in other words, there are at least two complete inspections of all premises and water containers weekly.

The prime object of this twice-weekly inspection has been the prevention of the breeding of the mosquito in the water barrels, wells, and cisterns, with which Laredo is so plentifully supplied, though all sick are reported as during the complete daily inspections, and are investigated by a medical officer and screened if the diagnosis is doubtful.

This antimosquito work has met with a very large measure of success. It is the exception to hear or see a single mosquito in most parts of the city. There has been and is, however, a great deal of passive, and some active, opposition to this work of the Service inspectors, and there is, unfortunately, little, if any, cooperation on the part of the householders. It would almost seem that certain elements of the population endeavor by every means in their power to promote and facilitate the breeding of mosquitoes on their premises, exercising the greatest ingenuity in concealing unscreened barrels and tubs full of water under beds and in dark corners, and when these containers are discovered and oiled, removing with bibulous paper all oil from the water surfaces before the larvæ in them have had time to be asphyxiated. This practice of removing oil became so frequent that it was necessary to order inspectors oiling water with larvæ to stay on the premises until all larvæ were dead.

Only the highest grade of refined illuminating oil has been used in this oiling of water containers, yet there is a somewhat general impression among the Mexican population that a subtle poison is really what is put into their water barrels, and that to allow it to remain there is dangerous to health and even life.

During the epidemic of last year a city ordinance requiring the oiling of all collections of water of whatever character was enacted and was nominally in force when operations were begun in the spring. It was felt, however, that the requirements of this ordinance were unnecessarily rigid; it was feared also by the city attorney that the ordinance, having been passed during the epidemic, might not be sustained by the courts if prosecutions were brought for violations when no epidemic was prevailing.

Accordingly, on March 25 the city council was requested to amend and extend the existing ordinance along the lines embodied in the following memorandum:

MEMORANDUM OF ORDINANCE SUGGESTED TO BE PASSED BY CITY COUNCIL, EXTENDING AND AMENDING ORDINANCE OF OCTOBER 30, 1903.

1. Requiring all physicians and householders to report to the city health officer without delay every case of fever of any character, and from whatever cause, coming within their knowledge, and prescribing penalties for noncompliance.
2. Requiring all cases, as described in paragraph 1, to be covered immediately with a mosquito netting until its removal is authorized by city health officer or his representative, and prescribing penalties for noncompliance.
3. Making it a finable offense for any householder to have on his premises the larvæ of mosquitoes, and requiring either oiling or screening of water containers to prevent breeding of mosquitoes.
4. Authorizing the health officer to remove cases suspected of being yellow fever to a fever sanatorium when, in his opinion, such cases can not be efficiently treated and screened at the patient's house.

After much delay an ordinance embodying most of the points suggested was finally passed. A copy of this ordinance is transmitted herewith.

To date (July 25, 1904) 339 complaints for violation of this ordinance have been filed in the corporation court. Of this large number only 9 have had fines imposed, the remainder being dismissed with a warning and lecture. It is unfortunate that the very first cases brought to trial were not fined, for as a consequence of the failure to do this there have undoubtedly been many more violations of the ordinance than would have occurred otherwise.

To avoid the necessity of constant oiling of all water containers, 1,000 barrel tops of 18-mesh galvanized wire gauze, on metal frames, were purchased by the Service and distributed among the poorer population. These, when kept on the barrels, are of course effective; but many are found each day by the inspectors either propped open on the barrel itself or else removed entirely.

The city authorities have recently ordered 1,000 screen tops similar to those supplied by the Service. These are being distributed as rapidly as made.

One disinfecting gang of 5 men has been constantly maintained in Laredo fumigating wherever mosquitoes have been reported, and also upon request from citizens, which requests are quite numerous. This force has also attended to the oiling of the ponds and puddles which occur after each rain.

Statistics of fumigation, inspection, and oiling work in Laredo are embodied in Appendix A.

WORK OUTSIDE OF LAREDO.

During the months of January, February, and March, as stated above, fumigation of outlying ranches within a radius of a day's team travel of Laredo was done, and the towns of Ojuelos, Aguilares, Palafox, Minera, and Cannel were also treated.

With the beginning of active operations in Laredo inspections of places along the lines running out of Laredo were instituted. This work was assigned to Acting Asst. Surg. L. W. Cock, and by the latter part of April the International and Great Northern Railroad had been inspected as far as San Antonio, the Texas Mexican Railway to Alice, and the Rio Grande and Eagle Pass to its terminus.

On April 25 a force, consisting of Acting Assistant Surgeon Cock and 4 experienced lay inspectors and fumigators, was organized for demonstrating by actual work antimosquito warfare along the lines of travel out of Laredo. The campaign was opened at Moore, on the International and Great Northern Railroad, and each town and station on that road from Laredo to San Antonio was visited by this force. Circulars on antimosquito work, in both English and Spanish, were distributed at each place, every effort being made to arouse the interest and secure the cooperation of the citizens.

Much actual fumigation and oiling was also done in places where there was suspicious disease last year, as may be seen from the statistics of this work in Appendix B.

On May 11 another force, consisting of Acting Assistant Surgeon MacGregor and 3 inspectors, was started along the line of the Texas-Mexican Railway. Statistics of work done along this road are also embodied in Appendix B.

Much lasting good has undoubtedly resulted from these campaigns, for while at several of the places visited the effort to arouse enthusiasm and continuation of the work among the citizens failed flatly, in the majority of instances much interest was awakened and every evidence manifested that the work would be continued.

At some of the larger towns along the Texas Mexican Railway, notably San Diego and Corpus Christi, public meetings were addressed by Doctor MacGregor on the subject of mosquitoes and their destruction.

The mining towns of Minera and Cannel have been inspected on several occasions by acting assistants from this station, and advice as to mosquito destruction given the coal companies. About 250 vaccinations of unprotected individuals were also done at the above-named places.

On May 17 Acting Assistant Surgeon Sauvignet was sent to inspect and report upon conditions in Rio Grande City, Starr County. Some apprehension was felt as to this place because of the large number of workmen who were engaged on the Mexican side of the Rio Grande in constructing the Monterey-Matamoras extension of the Mexican National Railroad, and also because it was feared that on account of the rigid quarantine requirements at Laredo and Eagle Pass, Rio Grande City would become more popular as a crossing point. No quarantinable disease was found by Doctor Sauvignet. On June 21 Acting Asst. Surg. W. R. Dashiell was placed on duty at Rio Grande City to act as quarantine officer and for information duty. Doctor Dashiell has advised with the county authorities on mosquito destruction, with the result that active measures have been undertaken.

SUSPICIOUS CASES IN ALICE.

Under date of June 8 Acting Assistant Surgeon MacGregor reported from Alice, Nueces County, the existence of fever with suspicious symptoms. These

cases were at once investigated by officers of the Service and the State of Texas, and were not considered yellow fever. However, it was decided to fumigate without delay the entire town of Alice. This was done rapidly and thoroughly under the supervision of Acting Assistant Surgeon Frick. Much oiling and screening work was also done in Alice, and every case of fever in the town was placed under a mosquito bar until clearly proven not yellow.

Every facility was given the Service by the physicians and citizens of Alice and the county authorities.

INSPECTION OF NUEVO LAREDO.

Daily visits have been made to Nuevo Laredo for purposes of inspection and for exchanging reports of operations with the authorities there. Much anti-mosquito work has undoubtedly been done in Nuevo Laredo under the direction of the accomplished mayor, Dr. J. F. de la Garza, who is also the medical sanitary agent of the superior board of health of Mexico. Mosquitoes are, however, still very noticeable in that city.

BORDER QUARANTINE.

Quarantine inspection of all incoming trains and passengers has been conducted under the immediate supervision of Acting Assistant Surgeon Hamilton, whose report for the fiscal year is transmitted herewith.

With the opening of the close quarantine season night and day guards were placed on the foot and railroad bridges to stop passengers entering on foot by those routes.

During former years a small detention camp had been maintained on grounds belonging to the city near the railroad bridge on the river front. In March, 1904, the city of Laredo formally leased this entire square of ground for a period of twenty years to the Public Health and Marine-Hospital Service for a detention camp site. A portion of this square which had been fenced by the Service in former years was graded, ditched, and grassed, and tents sufficient for the accommodation of 35 persons have been pitched upon it.

This camp site is ideal, but mosquito-proof barracks should be used instead of tents.

In concluding this report it may be stated with certainty that the work of the Service in Laredo has proven that all danger of a recrudescence of yellow fever is now long passed. If the disease appears later in the season the infection must be imported, and it is because of this ever-present and increasing danger of importation by man or mosquito that the work of inspection and mosquito destruction must be continued.

The cordial relations and mutual cooperation established by Surgeon Guiteras between the Service and the State and municipal authorities have continued uninterruptedly.

Respectfully,

T. F. RICHARDSON,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

[Inclosure.]

An ordinance for the prevention of yellow fever and other contagious and infectious diseases, having the mosquito as one, if not the only, means of transmitting such diseases from person to person.

[Passed by the city council of Laredo, Tex., April 23, 1904.]

Be it ordained by the city council of the city of Laredo:

SECTION 1. That all wells, cisterns, tanks, reservoirs, barrels, tubs, vats, pools, lakes, ponds, puddles, and other water containers holding and containing water therein within the corporated limits of the city of Laredo other than those in which the water therein contained is either coated and kept coated with oil or such water container screened in such manner as to prevent mosquitoes from getting therein or escaping therefrom is hereby declared a public nuisance.

SEC. 2. Any person, firm, company, or corporation having any of the water containers mentioned in section 1 of this ordinance on his, her, or its premises or upon any lot or block of land under his, her, or its control within the incorporated limits of said city which contains water who shall fail or refuse to cover the surface of such water with oil and keep the same so covered or in lieu

thereof keep such water container so screened as to prevent mosquitoes from getting therein or escaping therefrom shall be deemed guilty of a nuisance, and upon conviction shall be fined in any sum not less than \$5 nor more than \$25, and each day's refusal, neglect, or failure shall constitute a separate offense.

SEC. 3. It is hereby made the duty of the city health physician, together with such assistant physicians and health inspectors as he may appoint, to enter the house or premises of any inhabitant of said city and inspect, fumigate, and disinfect the same and to remove any sick person therefrom to the Mercy Hospital whom he has reason to believe is suffering from yellow fever when in his judgment such case can not be efficiently treated at the patient's house, the expenses to be borne by either the government of the State of Texas or that of the United States of America.

SEC. 4. The county and State health physicians and the several physicians of the Public Health and Marine-Hospital Service of the United States and their aids, assistants, inspectors, and employees, while engaged either in the treatment, suppression, or prevention of yellow fever or other contagious or infectious diseases in said city, are hereby vested with the same powers and authority delegated to the city health physician and his assistant physicians and health inspectors by the third section of this ordinance.

SEC. 5. Any person, firm, company, or corporation who shall refuse to permit any of the physicians, inspectors, and employees mentioned in the third and fourth sections of this ordinance to inspect his, her, or its premises or who shall resist the removal of any sick person to the Mercy Hospital whom the attending physician has pronounced to be afflicted with yellow fever or other infectious or contagious disease shall be deemed guilty of an offense, and upon conviction shall be fined in any sum not less than \$5 nor more than \$25.

SEC. 6. Any person, firm, company, or corporation who shall permit the larvæ of mosquitoes to exist on his, her, or its premises within the corporate limits of said city shall be deemed guilty of an offense, and upon conviction shall be fined in any sum not exceeding \$10.

SEC. 7. All ordinances and parts of ordinances in conflict with the provisions of this ordinance be, and the same are hereby, repealed.

L. C. NAVARRO, *Mayor pro tempore*.

Attest:

A. R. GARCIA, *Secretary*.

APPENDIX A.—Report of Service operations at Laredo, Tex., for period December 1, 1903, to June 30, 1904.

	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Inspected:								
Premises	4,551	-----	-----	17,869	61,133	40,219	38,134	161,906
Persons	-----	-----	-----	42,296	-----	-----	-----	42,296
Sick	-----	-----	-----	46	140	62	67	315
Fumigated:								
Houses	1,404	94	11	119	120	323	219	2,290
Rooms	5,496	221	38	295	286	772	629	7,737
Oiled:								
Premises	936	-----	-----	-----	-----	-----	-----	936
Containers	9,580	-----	-----	10,960	26,900	13,589	11,766	72,795
Wells	306	-----	-----	190	932	448	308	2,184
Tanks, cisterns	180	-----	-----	79	454	472	419	1,584
Ponds, excavations	41	-----	-----	-----	-----	-----	130	171

APPENDIX B.—Report of operations on lines of travel out of Laredo, Tex., for period December 1, 1903, to June 30, 1904.

	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Inspected:								
Premises	-----	-----	-----	-----	-----	868	1,248	2 116
Fumigated:								
Houses	-----	56	237	341	196	464	199	1,493
Rooms	-----	86	514	642	549	1,732	711	4,234
Oiled:								
Containers	-----	-----	-----	-----	-----	820	968	1,788
Wells	-----	-----	-----	-----	-----	254	37	291
Tanks, cisterns	-----	-----	-----	-----	-----	378	259	637
Ponds, excavations	-----	-----	-----	-----	-----	134	185	319

SMALLPOX IN THE UNITED STATES.

Further aid was extended to the health authorities of the State of Maine, upon the Canadian border, in the exclusion and suppression of smallpox, the report from officers detailed for this work showing a total of 93 families under observation, 3,752 persons inspected, 1,736 persons vaccinated, 206 cases of smallpox treated, and 111 dwellings and 20 schoolhouses disinfected.

Upon request of the proper State authorities expert officers have been detailed in an advisory capacity to several points in other States to afford aid in the diagnosis and proper method for the suppression of the disease.

In October, 1903, upon request of State health authorities, Passed Asst. Surg. J. C. Perry was directed to proceed to Charles Town, W. Va., to investigate the prevailing disease in that region. His report was published in Public Health Reports of October 23, 1903.

REPORT OF OPERATIONS FOR THE EXCLUSION AND SUPPRESSION OF
SMALLPOX IN THE STATE OF MAINE.

REPORT OF SURG. P. C. KALLOCH.

QUARANTINE.

Portland, Me., July 6, 1904.

SIR: In accordance with Bureau letter of the 17th ultimo, I have the honor to make the following report of the efforts made under the direction of the Public Health and Marine-Hospital Service for the suppression of smallpox in northern Maine during the year ended June 30, 1904. This work was continued from the previous year and was undertaken for the purpose of assisting the State board of health, which found itself in need of help owing to a lack of funds at its disposal.

The work of suppressing smallpox on the Canadian border is exceedingly difficult on account of the seasonal character of the prevailing occupation. The lumbermen go long distances into the forest to cut timber, which is conveyed to the streams where it awaits the spring rise of water. In the late spring another expedition is made for the purpose of driving the logs down the rivers to the mills. These two excursions are made by large numbers of men, but between times there is a constant passing from camp to camp and to larger centers of population, so that an infectious disease like smallpox is easily disseminated.

Another feature which adds to the difficulty is the ignorance of this part of the population, as it consists largely of French Canadians who have not been instructed in sanitary matters. They not only fail to aid in measures intended for their benefit, but often oppose such measures. The efforts therefore in sparsely settled regions are less successful than they would be in more enlightened and more densely populated communities.

The work of the Service has consisted in the inspection of persons in transit to and from the lumber camps, the disinfection of the clothing of suspects, and the vaccination of those persons who were not already protected. The disinfection of houses was also practiced where they were suspected of being infected.

At the beginning of the year Doctor Mason was appointed as acting assistant surgeon at Fort Kent, and, with the aid of a helper, disinfected several houses in that locality. Twelve cases of smallpox were found in a single house, making a total of 24 cases during the first ten days of July. Through vigorous treatment the disease was subdued and the work at this point discontinued July 31.

Acting Assistant Surgeon Nichols was engaged at Jackman at the same time, having also an assistant in the work of disinfection. Among the persons passing at this point, several cases of smallpox were discovered and isolated. The inspections were also discontinued at this place on July 31.

On July 25 Doctor Young, secretary of the State board of health, reported several outbreaks of smallpox in the Madawaska region, in the northeastern part of the State, 20 houses having been disinfected by the State board. Doctor Hammond, of Van Buren, was employed by the Service to visit infected points and to carry out the necessary sanitary measures. The disease has continued

at different places in this section up to the present time, new focuses appearing as fast as the old ones are obliterated.

At Lowelltown, which is situated on the Canadian Pacific Railroad near the border of the State, Doctor Boothby has been employed during most of the year. The trains have been inspected and the same sanitary measures enforced as at other inspection stations.

Respectfully,

P. C. KALLOCH,
Surgeon, Public Health and Marine-Hospital Service.

The SURGEON-GENERAL.

QUARANTINE,

Portland, Me., July 18, 1904.

SIR: Referring to my report of the 5th instant on the subject of the efforts made to overcome smallpox in northern Maine during the last fiscal year, I have the honor to inclose a letter just received from Dr. A. G. Young, secretary of the State board of health, on the subject, which you may desire to use in connection with the report.

Respectfully,

P. C. KALLOCH,
Surgeon, Public Health and Marine-Hospital Service.

The SURGEON-GENERAL.

[Inclosure.]

LETTER FROM SECRETARY OF THE MAINE STATE BOARD OF HEALTH ON THE EPIDEMIC WORK IN NORTHERN MAINE.

In the autumn of 1903 the lumber camps in the northern part of the State of Maine were seriously exposed to the danger of smallpox from the direction of the cities of Bangor and Oldtown, from which cities many of the lumbermen are hired, and in both of which smallpox had broken out. There was also serious danger of the importation of infection from the provinces of Quebec and New Brunswick by the many men seeking work in the lumber regions.

Although the lumber operators complied fairly well with the special order of the State board of health requiring the vaccination of all lumbermen before going to the camps, many outbreaks occurred in the camps, but in all of those outbreaks they were restricted to but four cases. In accomplishing this the State board worked under the disadvantage of an insufficient epidemic fund for covering so vast a forest region. Work in this region, where the medical inspectors and nurses of the State board have been obliged to make many trips through the forest of from 40 to 75 miles or more by buckboard, tote team, canoe, or on foot, has been found to be hard and costly work. Under these circumstances, as they were stated by the State board of health, the Public Health and Marine-Hospital Service felt it expedient and best to render aid at the border in preventing the importation of infection from without the State. The inspection services, therefore, which the State board of health had already put on at Lowelltown, on the Canadian Pacific Railway, and at Van Buren, Me., were taken over by the national authorities.

At the Lowelltown station the number of men coming into the State by train seeking employment in the lumber camps, and the number who were found unprotected by vaccination and who were vaccinated, was as follows:

	Passed.	Vaccinated.		Passed.	Vaccinated.
1903.			1904.		
September.....	50	18	February.....	324	136
October.....	685	307	March.....	172	58
November.....	722	297	April.....	748	220
December.....	369	189	May.....	244	82
			June.....	110	19
1904.					
January.....	344	137			

In addition to these, 30 men were refused admittance into the State and were turned back. Sixty men were required to take a disinfecting bath and to have their clothing and other effects disinfected.

The work done under the direction of Acting Asst. Surg. H. H. Hammond at Van Buren is shown in the following tabulation :

	Families.	Cases.	Dwellings fumigated.	School-houses.	Vaccinations.
1903.					
September	16	25	16	2	130
October	10	40	10	10	60
November	20	65	12	-----	50
December	9	17	39	-----	45
1904.					
January	12	13	7	-----	-----
February	5	3	6	8	90
March	11	23	11	-----	-----
April	10	20	10	-----	-----
Total	93	206	111	20	375

THE NATIONAL QUARANTINE STATIONS.

The protection afforded the United States proper in the exclusion of quarantinable disease has been continued at the 40 national maritime inspection and disinfection stations located in the waterways to ports of entry upon the Atlantic, Gulf, and Pacific coasts.

A total number of 7,021 vessels were inspected and 323 vessels disinfected before permitted entry, with as little delay as possible to commercial interests.

These detention and disinfection stations are equipped with a total of 30 substantial wharves, 96 main buildings, and 99 small buildings. The floating property consists of 9 boarding steamers, 4 disinfecting barges, and 22 steam and naphtha launches, which statistical facts serve in a way to show the character and importance of these stations.

On March 31, 1904, a request was made for a deficiency appropriation of \$9,500 for "Repairs to vessels, quarantine service." This amount was made available, and these vessels are now being placed in efficient condition.

On account of the danger of the introduction of yellow fever into the United States, the following amendments to the quarantine regulations were promulgated :

[1904. Department Circular No. 30. Public Health and Marine-Hospital Service.]

TREASURY DEPARTMENT, OFFICE OF THE SECRETARY.

Washington, March 30, 1904.

To the national, State, and local quarantine officers, collectors of customs, ship-owners and agents, and others concerned:

Paragraph 68 (c), quarantine regulations of 1903, is hereby amended to read as follows :

"Paragraph 68 (c) : If arriving at a port south of the southern boundary of Maryland in the season of close quarantine, April 1 to November 1, directly or via a northern port, from a tropical American port, unless said port is known to be free from yellow fever."

The effect of this amendment is to cause the close quarantine season to begin April 1 instead of May 1, with regard to vessels from ports known or suspected of being infected with yellow fever, and arriving at southern ports, either direct or via northern ports.

Paragraph 107 (a) is hereby amended to read as follows :

"Paragraph 107 (a) : If arriving in five days or less she may be admitted to pratique after being fumigated again, but without further detention than is necessary to complete the five days from port of departure."

ROBERT B. ARMSTRONG, Assistant Secretary.

[Circular letter.]

Monthly report upon condition of naphtha launches and sail and small boats at quarantines.

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, November 11, 1903.

To medical officers in command, United States national quarantines:

You are hereby directed to make a report at the end of each month upon the naphtha launches and all sail and small boats at your station. A general description of these boats is desired, giving the name, length, beam, draft, date when received, when the last repairs were made and by whom, and a statement as to the condition of each. If any of these boats are not in serviceable condition, and can not be repaired by the station force, report should be made as to the cause of the defects, accompanied by an estimate of the probable cost of repair.

You are directed to make the first report for the month of October, 1903.

You are directed to acknowledge receipt of this letter.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

A report of transactions from each quarantine station follows:

PORTLAND, ME.

[Portland Quarantine; post-office address, Portland, Me.]

[Report of the medical officer in command, Surg. P. C. Kalloch. Assumed command under official orders of December 27, 1901.]

QUARANTINE, PORTLAND, ME., *July 5, 1904.*

SIR: The transactions of this station for the fiscal year ended June 30, 1904, have been limited to the quarantine inspection of vessels and crews from foreign ports and the inspection of immigrants. A site for a quarantine station has been purchased, consisting of about 10 acres of land on House Island, at a cost of \$20,000. This site is well adapted to the purpose. No plans for the establishment of the station have thus far been made.

The steam launch, received in November, 1903, and named *Petrel*, is 40 feet in length, is well constructed, and very well answers the purpose for which it was supplied.

No cases of a quarantinable nature have arrived from foreign ports during the year at this port.

Respectfully,

P. C. KALLOCH, *Surgeon.*

The SURGEON-GENERAL.

[Inclosure.]

Transactions at Portland (Me.) National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total
Vessels spoken and passed.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Steamers inspected and passed....	6	7	3	5	8	14	14	11	13	9	4	6	100
Steamers disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Sailing vessels inspected and passed.....	0	2	0	0	0	0	0	0	2	2	0	1	7
Sailing vessels disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Crew on steamers	387	439	193	323	498	882	896	640	931	870	271	331	6,661
Crew on sailing vessels.....	0	21	0	0	0	0	0	0	14	15	0	15	65
Passengers on steamers.....	0	0	0	390	77	85	75	49	183	493	0	0	1,342
Passengers on sailing vessels.....	0	0	0	0	0	0	0	0	0	0	0	0	0

EASTPORT.

[Eastport (Me.) Quarantine.]

[Report of Acting Asst. Surg. E. M. Small, in charge.]

EASTPORT, ME., July 1, 1904.

SIR: I herewith submit my annual report for the year ending June 30, 1904.

I have been so fortunate as to discover nothing of a contagious nature among the large number of persons subjected to my inspection. I think this is largely due to the fact that travelers are aware of the fact that this is a quarantine station; consequently the sick or suspects avoid Eastport.

I have urged on the officers of all steamers the importance of refusing passage to all suspects, and they have followed my advice. Smallpox and diphtheria have been all around us, but by closely watching infected places we have escaped. I endeavor to keep in touch with the neighboring towns, and find their boards of health willing to give me such information as I desire.

I am happy to state that at the present time this section is particularly healthy.

Respectfully,

EDWARD M. SMALL,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

[Inclosure.]

Transactions at Eastport (Me.) National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June.	Total.
Vessels spoken and passed.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Steamers inspected and passed.....	117	110	110	106	72	68	51	55	62	65	91	175	1,012
Steamers disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Sailing vessels inspected and passed.....	14	13	12	13	6	9	1	1	5	12	15	8	109
Sailing vessels disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Crew on steamers.....	2,888	2,705	2,676	2,540	1,523	1,254	874	894	1,108	1,322	2,361	2,577	22,723
Crew on sailing vessels.....	82	73	62	68	31	57	9	6	24	68	83	56	619
Passengers on steamers.....	5,511	5,718	4,743	3,288	1,932	1,529	1,300	975	1,327	1,536	2,296	4,855	34,917
Passengers on sailing vessels.....	13	0	0	0	0	0	0	0	0	0	0	10	23

REEDY ISLAND.

[Reedy Island Quarantine; post-office address, via Port Penn, Del.]

[Report of Passed Asst. Surg. H. W. Wickes. Assumed command under official orders of March 12, 1903.]

REEDY ISLAND QUARANTINE, July 1, 1904.

SIR: I have the honor to submit the following report of transactions at this station, together with the tabulated statistical report for the fiscal year ending June 30, 1904:

During the year 30 vessels were spoken and passed; 901 vessels inspected and passed, of which 785 were steam vessels and 116 were sail vessels; a total of 57,787 persons were inspected, of which 31,911 were members of crews of steam vessels, 1,896 members of crews of sail vessels, 23,977 passengers on steam vessels, and 3 passengers on sail vessels.

Five vessels were disinfected, of which two were steam vessels and three sail vessels, as follows:

July 14, 1903, American ship *Clarence S. Bement*, from Honolulu, with cargo of sugar, 24 in crew, was held on advice of the quarantine officer at Honolulu on account of noncompliance with the special quarantine regulations of the Territory of Hawaii. The hold was fumigated with sulphur and the crew bathed and their dunnage disinfected.

July 19, 1904, American S. S. *Hawaiian*, from Honolulu, with cargo of sugar, 44 in crew, was remanded to this station from Delaware Breakwater for fumigation and disinfection of dunnage.

February 24, British ship *Mersey*, from Demerara, in ballast, 35 in crew, was held and the hold fumigated for destruction of rats. Ninety-seven dead rats were found and burned after fumigation. This vessel had been engaged in carrying coolies from Calcutta to Demerara.

March 9, 1904, British S. S. *Montauk Point*, from London, with a general cargo, 37 in crew, and 12 passengers (cattlemen), with 1 case of smallpox in crew, was held and all living compartments and dunnage disinfected. The case of smallpox was isolated on the island and all on board, including the pilot, were held for observation until ordered released by the Bureau.

May 17, 1904, American schooner *Madalene Cooney*, from Fernandina, with lumber, 9 in crew, among which there was 1 case of smallpox, was held for disinfection. The case of smallpox was removed to the island, and after disinfection the vessel and the remainder of the crew, with the exception of the steward and his wife, were released by order of the Bureau.

Respectfully,

H. W. WICKES,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

[Inclosure.]

Transactions at Reedy Island National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed	3	6	8	2	4	-----	-----	5	-----	-----	1	1	30
Steamers inspected and passed	72	77	69	51	73	64	64	46	67	72	80	50	785
Steamers disinfected	1	-----	-----	-----	-----	-----	-----	-----	1	-----	-----	-----	2
Sailing vessels inspected and passed	7	15	12	8	6	13	2	4	12	11	13	13	116
Sailing vessels disinfected	1	-----	-----	-----	-----	-----	-----	1	-----	-----	1	-----	3
Crew on steamers	2,787	2,829	2,684	1,999	3,067	2,456	2,473	1,763	3,135	2,982	3,631	2,105	31,911
Crew on sailing vessels	76	306	171	177	75	239	65	67	192	193	172	163	1,896
Passengers on steamers	2,653	2,441	4,014	1,795	2,130	1,146	957	778	1,790	1,866	2,790	1,617	23,977
Passengers on sailing vessels	-----	1	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	3

DELAWARE BREAKWATER.

[Delaware Breakwater Quarantine; post-office address, via Lewes, Del.]

[Report of the medical officer in command, Passed Asst. Surg. C. H. Lavinder. Assumed command under official orders of March 8, 1901.]

DELAWARE BREAKWATER QUARANTINE, *July 1, 1904.*

SIR: I have the honor to inclose herewith tabulated quarantine report of this station for the fiscal year ending June 30, 1904, and I submit below an additional report.

As will be noticed, the boarding work of this station has very much decreased.

A total of only 107 vessels of all classes inspected for the entire year. This is probably the smallest number of vessels ever inspected at this station during any previous year of its existence. The shipping here has been steadily decreasing for some time. As to the cause of this, I am told by shipping people that it is due to falling off in the sugar importations from Java, Cuban and West Indies sugar apparently replacing the Java sugar. A large part of the shipping at this port has always been sugar-laden vessels from Java sent here to await orders.

Following is a brief account of all vessels which arrived during the year requiring any comment: Ship *Clarence S. Bement*, with sugar from Honolulu, inspected and passed without pratique on account of refusing disinfection by Service officers at port of departure. *S. S. Hawaiian*, with sugar from Honolulu via South American ports, remanded to Reedy Island after removal of a suspicious case of inguinal bubo. *S. S. Saint Hugo*, with sugar from Java, inspected and released without pratique by reason of suspicious sickness on the voyage. *S. S. Maric*, with sugar from Peruvian ports, held a few hours by reason of calling at plague-infected port and shipping men there, released and quarantine officer at port of destination advised.

The following vessels may be noticed: *S. S. Knight Errant*, with sugar from Java, Chinese crew, had 2 deaths on the voyage from beriberi and a third from the same cause in this harbor. Bark *Comliebank*, in ballast, from Lourenço Marquez, wrecked on the coast near here, was passed after visiting the master at the life-saving station and examining the vessel's papers. The school ship *Naratoga* was passed twice during the year on the medical officer's certificate.

Glandular examinations were made on several vessels during the year.

The practice of passing some vessels without pratique, as above, is, by reason of local conditions, often the best quarantine disposition of them at this port. Such a procedure often saves the vessel both time and annoyance, and seems safe.

Respectfully,

The SURGEON-GENERAL.

C. H. LAVINDER,
Passed Assistant Surgeon.

[Inclosure.]

Transactions at Delaware Breakwater National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Set.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Steamers inspected and passed....	7	5	4	5	4	6	3	2	3	5	2	8	54
Steamers disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Sailing vessels inspected and passed.....	5	5	3	4	4	4	9	3	3	3	6	4	53
Sailing vessels disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Crew on steamers.....	249	133	139	137	141	183	68	24	66	141	65	162	1,508
Crew on sailing vessels.....	120	120	35	104	111	161	150	35	41	54	157	60	1,157
Passengers on steamers.....	2	15	0	0	0	0	0	0	0	5	5	1	28
Passengers on sailing vessels....	0	0	0	4	5	0	0	0	0	1	0	0	10

ALEXANDRIA.

[Report of Acting Asst. Surg. Arthur Snowden, in charge.]

Transactions at Alexandria (Va.) National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....													
Steamers inspected and passed.....													
Steamers disinfected.....													
Sailing vessels inspected and passed.....	1	2		2	2				3	1	1	1	13
Sailing vessels disinfected.....													
Crew on steamers.....													
Crew on sailing vessels.....	7	15		16	14				26	7	7	8	100
Passengers on steamers.....													
Passengers on sailing vessels.....												2	2

CAPE CHARLES.

[Cape Charles Quarantine; post-office address, via Fortress Monroe, Va.]

[Report of the medical officer in command, Asst. Surg. J. S. Boggess. Assumed command under official orders of November 21, 1902.]

CAPE CHARLES QUARANTINE, July 1, 1904.

SIR: In compliance with Bureau circular letter of April 18, 1904, relative to annual reports from domestic quarantine stations, I have the honor to state that during the fiscal year ending June 30, 1904, 28 sailing vessels, carrying crews aggregating 321 men and 8 passengers, and 226 steam vessels, carrying crews aggregating 10,610 men and 1,924 passengers, came under the jurisdiction of this station. This includes 3 foreign and 5 domestic men-of-war (which were passed upon the certificates of the naval surgeons on board), which carried complements aggregating 788 and 2,779, respectively. No sailing vessels were fumigated, but 4 steam vessels, carrying 132 officers and men were, sulphur being used by the pot method in all cases. No cases of quarantinable disease came under observation.

In addition to the above strictly quarantine work the medical officer in command (acting under Bureau telegraphic orders of April 2) proceeded to Newport News, Va., on April 6, with the British steamship *Doune Castle*, after the quarantine inspection of that vessel was completed, for the purpose of inspecting, in accordance with the immigration laws, 386 Boer and British soldiers destined for the St. Louis Exposition.

Relations with the other branches of the Government service and with the local health authorities have been entirely harmonious during the past year.

A statistical table showing the station work for the fiscal year is inclosed herewith.

Respectfully,

JNO. S. BOGGESS,
Assistant Surgeon in Command.

The SURGEON-GENERAL.

[Inclosure.]

Transactions at Cape Charles National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....													0
Steamers inspected and passed.....	21	20	22	23	22	13	23	15	9	15	21	22	236
Steamers disinfected.....	1	2										1	4
Sailing vessels inspected and passed.....	3	1				1	3	4	2	1	6	7	26
Sailing vessels disinfected.....													0
Crew on steamers.....	720	660	729	1,457	1,322	793	980	499	322	564	1,919	705	10,610
Crew on sailing vessels.....	26	13				10	47	46	21	26	62	66	321
Passengers on steamers.....	62	134	43	110	68	89	190	89	104	481	436	68	1,924
Passengers on sailing vessels.....								1		3	3	1	8

CAPE FEAR.

[Cape Fear Quarantine; post-office address, via Southport, N. C.]

[Report of the medical officer in command, Asst. Surg. B. S. Warren. Assumed command under official orders of March 19, 1903.]

CAPE FEAR QUARANTINE, July 1, 1904.

SIR: I have the honor to transmit herewith a report of transactions at this station during the fiscal year ended June 30, 1904. Of the 60 vessels reported 15 were from the West Indies, 5 from South America, 3 from South Africa, 16 from Europe, 3 from Cuba, and 18 from domestic ports.

Four vessels were disinfected—1 from Cuba, 1 from South Africa, and 2 from South America.

Respectfully,

B. S. WARREN,
Assistant Surgeon.

The SURGEON-GENERAL.

[Inclosure.]

Transactions at Cape Fear National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	0	0	2	0	0	0	0	0	0	0	0	0	2
Steamers inspected and passed.....	4	0	8	11	2	0	4	0	0	0	1	2	32
Steamers disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Sailing vessels inspected and passed.....	1	1	3	1	2	2	2	3	1	4	1	1	22
Sailing vessels disinfected.....	1	0	0	0	0	0	0	0	1	1	0	1	4
Crew on steamers.....	91	0	213	253	44	0	106	0	0	0	20	54	760
Crew on sailing vessels.....	15	6	19	9	20	17	22	23	26	40	8	16	230
Passengers on steamers.....	0	0	0	0	0	0	5	0	0	0	0	0	5
Passengers on sailing vessels.....	0	0	0	0	0	0	0	1	0	0	0	0	1

NEWBERN, N. C.

Under date of July 28, 1904, the acting assistant surgeon in charge of quarantine at Newbern, N. C., reported that there had been no transactions during the fiscal year ending June 30, 1904.

WASHINGTON, N. C.

Under date of June 30, 1904, the acting assistant surgeon in charge of quarantine at Washington, N. C., reported that there had been no transactions during the fiscal year ending June 30, 1904.

SAVANNAH.

[Savannah Quarantine; post-office address, via Savannah, Ga.]

[Report of the medical officer in charge, Acting Asst. Surg. William J. Linley. Assumed charge under official orders of May 2, 1899.]

SAVANNAH QUARANTINE, July 6, 1904.

SIR: In compliance with instructions received in Bureau circular letter dated April 18, 1904, I have the honor to transmit the following report of transactions at this station for the fiscal year ended June 30, 1904:

One hundred and sixty-two steamships and 73 sailing vessels, carrying 5,604 seamen and 22 passengers, were boarded and inspected. One hundred and forty-nine of the former were given pratique immediately on inspection, 2 disinfected and held for observation, 2 fumigated and released, 3 held to complete period of observation, 5 held from one to three days pending diagnosis of cases of sickness aboard, and 1 held subject to disinfection, but departed without it, having received orders for another port. Thirty-five of the latter were inspected and given pratique at once, 10 disinfected and detained for observation, 6 fumigated and released, 4 fumigated and released after discharge of ballast, 1 held under observation and released without pratique, and 17 held subject to disinfection or fumigation, but released without disinfection and consequently without pratique, having received orders for some other port. Twenty-nine vessels were boarded in Tybee Roads. The average period of detention of vessels held for disinfection and subsequent observation was six and three-fourths days, and of those held simply for fumigation two and three-tenths days.

Nationality and class of vessels boarded during the year.

	Steam-ships.	Barkentines.	Barks.	Ships.	Schooners.	Tug-boats.	Total.
British.....	106	4	.....	.....	11	.....	121
Norwegian.....	4	.....	28	1	.....	.....	33
Swedish.....	.....	.....	3	.....	.....	.....	3
Danish.....	6	.....	.....	.....	.....	.....	6
Russian.....	2	.....	5	.....	.....	.....	7
Italian.....	1	.....	3	.....	.....	.....	4
Belgian.....	2	.....	.....	.....	.....	.....	2
Uruguayan.....	.....	.....	2	.....	.....	.....	2
German.....	13	.....	1	1	.....	.....	15
Austrian.....	12	.....	.....	.....	.....	.....	12
Spanish.....	1	.....	1	1	.....	.....	3
Dutch.....	12	.....	.....	.....	.....	.....	12
American.....	2	1	1	.....	10	1	15
Total.....	161	5	44	3	21	1	235

Two vessels arrived with *Stegomyia fasciata* aboard—the British barkentine *Meteor*, October 2, twenty-five days from Para, and the American schooner *Lejok*, October 6, eleven days from Habana.

One thousand and seventy-five tons of ballast were discharged during the year.

Transactions at Savannah (Ga.) National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Steamers inspected and passed.....	6	9	19	24	29	14	19	7	9	8	6	8	159
Steamers disinfected.....	0	1	0	3	0	0	0	0	0	0	0	0	4
Sailing vessels inspected and passed.....	4	3	10	4	7	6	3	1	3	6	4	1	52
Sailing vessels disinfected.....	1	1	0	5	1	0	2	2	1	4	3	1	21
Crew on steamers.....	141	257	555	815	815	483	581	264	217	299	151	195	4,794
Crew on sailing vessels.....	57	33	118	103	118	72	50	43	30	115	73	19	840
Passengers on steamers.....	0	2	2	3	1	0	1	4	0	2	0	0	15
Passengers on sailing vessels.....	0	0	1	5	0	0	1	0	0	0	0	0	7

Under "inspected and passed" in the above table are included 18 vessels held subject to fumigation, but which put to sea without it, having received orders for some other port; 3 held from one to three days to complete period of observation, and 5 held from one to two days pending diagnosis of cases of sickness aboard.

Countries from which vessels detained came.

South Africa	16	Peru	2
Cuba	12	Cuba via United States	2
Brazil	9	Brazil via United States	1
United States	5	Mexico via United States	1
West Indies	2	Ireland	1

Ballast and cargoes brought by vessels treated at station.

Sand	7	Light	2
Stone	1	General	1
Water	1	Nitrates	2

Sickness observed aboard vessels on arrival.

Acne	1	Enteritis	3
Beriberi	7	Jaundice	1
Catarrhal fever	1	Malaria	4
Chancreoids	1	Neuralgia	2
Cystitis	1	Pneumonia	4
Dysentery	1	Rheumatism	2
Enteralgia	1	Scabies	4
Enteric fever	2	Traumatic gangrene	1

During the month of January two negro servants employed by the medical officer developed mild atypical smallpox. The women were isolated in the station hospital, all unprotected persons vaccinated, and the medical officer's quarters thoroughly disinfected.

Respectfully,

The SURGEON-GENERAL.

WM. J. LINLEY,
Acting Assistant Surgeon.

SOUTH ATLANTIC.

[South Atlantic Quarantine; post-office address, via Inverness, Ga.]

[Report of the medical officer in command, Passed Asst. Surg. G. M. Corput. Assumed command under official orders of November 25, 1901.]

SOUTH ATLANTIC QUARANTINE, June 30, 1904.

SIR: I have the honor to submit the following report of transactions at this station during the fiscal year ending June 30, 1904:

Twenty-five steamships, with a total tonnage of 50,619 tons, were inspected and passed. Three steamships were spoken and passed. No steamships have been disinfected during the year. Three sailing vessels, with a total tonnage of 3,040 tons, were disinfected, and 820 tons of ballast discharged. Nine sailing vessels, with a total tonnage of 6,898 tons, were inspected and passed. No vessels were remanded to this station from other ports during the year, and no sickness has occurred in quarantine. Four jetties to prevent encroachment by the sea at the south end of the island have been built and washing at this point stopped. Seventy-four new creosoted piles have been driven at the north end and other minor repairs made. Painting and other minor repairs have been done by attendants on the buildings at the south end. The telephone line between north and south ends of the island has been thoroughly repaired. The marine railway at the south end has been repaired and new timbers put in, in place of old ones which had rotted out. New fire apparatus has been installed and the fire protection is now better than it has ever been.

The health of officer and attendants has been exceptionally good and no sickness has occurred in the station force during the year.

In conclusion, I have the honor to report that relations with local and other health authorities have been pleasant throughout.

Respectfully,

G. M. CORPUT,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

[Inclosure.]

*Annual report of transactions at South Atlantic National Quarantine Station
for year ending June 30, 1904.*

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....							1	2					3
Steamers inspected and passed...	1	7	2	1	.....	1	3	2	1	2	5	.....	25
Steamers disinfected.....													0
Sailing vessels inspected and passed.....						1	2	3		1		2	9
Sailing vessels disinfected.....					1	.....	1	.....	.....	.....		1	3
Crew on steamers.....	23	172	49	26	.....	26	85	50	20	43	124	.....	618
Crew on sailing vessels.....					16	12	45	39		9		39	160
Passengers on steamers.....											3	.....	3
Passengers on sailing vessels.....													0

8629-04-22

BRUNSWICK.

[Brunswick Quarantine; post-office address, via Brunswick, Ga.]

[Report of medical officer in command, Asst. Surg. J. T. Burkhalter. Assumed command under official orders of July 18, 1902.]

BRUNSWICK QUARANTINE, July 2, 1904.

SIR: I have the honor to submit the following report of transactions at this station for the year ended June 30, 1904, together with attached statistical form letter:

The inclosed schedule shows that 29 vessels were spoken and passed, 14 steamers inspected and passed, 69 sailing vessels inspected and passed, and 14 sailing vessels disinfected.

Nationality of vessels disinfected: Spanish, 3; British, 1; Norwegian, 6; Uruguayan, 1; Portuguese, 1; Italian, 2.

Ports from which they arrived: South African, 6; Cuban, 4; Brazilian, 2; French Guiana, via West Indian, 1; South Africa, via West Indian, 1.

No vessel arrived with a quarantinable disease aboard.

The following diseases were discovered on board during the year: Malarial fever, 1; beriberi, 4; heat stroke, 1; intestinal obstruction, 1; valvular disease of heart, aortic, 1.

The following vessels arrived in quarantine with mosquitoes aboard:

(1) Spanish brigantine *Alfredo*, six days out from Habana; arrived July 8. Mosquitoes found in cabin and larvæ in tub on deck. No *Stegomyia fasciata* among specimens examined.

(2) British barkentine *Jno. S. Bennett*, five days out from Habana; arrived on July 27. Cabin, forecastle, and between decks literally swarming with mosquitoes. Two tanks on deck alive with larvæ and pupæ. All specimens examined were *Stegomyia*; also those hatched out from tanks.

(3) Spanish bark *F. G.*, arrived July 29, six days out from Habana. A few *Stegomyia* caught and examined. No breeding place discovered aboard.

(4) British schooner *Brooklyn*, five days out from Habana; arrived August 20. *Stegomyia* discovered in cabin and forecastle. No breeding place aboard.

(5) Uruguayan bark *Guernika*, forty-one days out from Rio; arrived March 25. Given preliminary disinfection in stream, after which I discovered larvæ in tank on deck and captured one *Stegomyia* from cabin and tank, respectively. Vessel laid 2 miles out from Rio, in open stream.

(6) Spanish bark *Angelita*, eight days out from Habana, arrived in quarantine June 30, with *Stegomyia* in cabin and tank of water on deck alive with larvæ.

Respectfully,

JNO. T. BURKHALTER, *Assistant Surgeon*.

The SURGEON-GENERAL.

[Inclosure.]

Transactions at Brunswick (Ga.) National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	3	2	3	.....	4	1	2	5	3	2	2	2	29
Steamers inspected and passed.....	1	.....	1	2	2	3	2	1	.....	.....	1	1	14
Steamers disinfected.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sailing vessels inspected and passed.....	1	7	2	3	9	10	9	4	10	6	7	1	69
Sailing vessels disinfected.....	4	.....	2	3	2	1	.....	.....	1	.....	.....	1	14
Crew on steamers.....	23	.....	17	50	52	71	40	19	.....	.....	35	24	331
Crew on sailing vessels.....	54	89	48	81	124	108	93	48	128	70	62	34	939
Passengers on steamers.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	1	3
Passengers on sailing vessels.....	.....	1	1	3	2	3	2	.....	1	.....	1	.....	14

TAMPA BAY.

[Tampa Bay Quarantine; post-office address, via Tampa, Fla.]

[Report of medical officer in command, Asst. Surg. R. E. Ebersole. Assumed command under official orders of December 7, 1903.]

TAMPA BAY QUARANTINE, June 30, 1904.

SIR: I have the honor to forward herewith report of transactions at this station during the fiscal year ended June 30, 1904, as directed by Bureau circular letter of April 18, 1904.

Number of steamers inspected and passed.....	44
Number of sailing vessels inspected and passed.....	110
Number of steamers disinfected.....	2
Number of sailing vessels disinfected.....	0

The vessels entering here are mainly vessels from Cuban and clean Central American ports, with a few steamers from European ports. They are usually empty or in ballast. The only vessels carrying cargo which enter here are sailing vessels returning from Cuba with cedar logs, and fruiters, sailing vessels, from ports in Honduras. Being from clean ports, these vessels are subject to no further treatment at quarantine than inspection.

As compared with the number of vessels inspected and passed at this station last year, there is noted a decrease of 23 steamers and 13 sailing vessels inspected and passed during this year. I am unable to account for the decrease in the number of vessels entering this port unless it be due to the almost complete discontinuance of exportation of cattle to Cuba.

Two steamers from Mexican ports were disinfected and held during the year. One vessel, British ship *Dynomene*, from Cape Town, discharged her ballast here without further treatment in quarantine. No sailing vessels were disinfected during the year.

No case of quarantinable disease was treated at this station during the year.

Respectfully,

R. E. EBERSOLE, *Assistant Surgeon.*

The SURGEON-GENERAL.

[Inclosure.]

Transactions at Tampa Bay National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	0	0	0	0	0	0	0	0	0	0	1	0	1
Steamers inspected and passed.....	2	1	2	2	3	2	8	2	7	1	9	4	43
Steamers disinfected.....	0	0	1	0	0	0	0	0	0	0	0	1	2
Sailing vessels inspected and passed.....	11	4	6	1	3	13	16	14	12	6	9	13	108
Sailing vessels disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Crew on steamers.....	49	21	87	54	70	45	207	50	177	23	242	145	1,170
Crew on sailing vessels.....	83	30	48	6	22	105	124	108	82	49	61	93	911
Passengers on steamers.....	2	0	0	0	2	0	1	0	2	0	1	1	9
Passengers on sailing vessels.....	7	0	3	0	0	8	11	4	14	0	4	12	63

CUMBERLAND SOUND.

[Cumberland Sound quarantine; post-office address, via Fernandina, Fla.]

[Report of Acting Asst. Surg. J. Louis Horsey, in charge.]

Transactions at Cumberland Sound National Quarantine Station for the year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	30	19	29	30	0	0	0	0	0	15	28	24	175
Steamers inspected and passed.....	9	8	7	3	3	7	3	5	2	4	7	6	64
Steamers disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Sailing vessels inspected and passed.....	1	1	4	6	4	8	9	8	7	7	2	0	57
Sailing vessels disinfected.....	2	2	3	4	3	0	0	0	1	2	2	1	20
Crew on steamers.....	235	200	208	87	91	170	95	141	59	114	195	212	1,817
Crew on sailing vessels.....	276	193	296	353	75	86	72	65	86	206	208	190	2,165
Passengers on steamers.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Passengers on sailing vessels.....	3	0	4	6	0	0	1	0	6	1	4	7	22

ST. JOHNS RIVER INSPECTION STATION.

[St. Johns River Inspection Station; post-office address, Mayport, Fla.]

[Report of Acting Asst. Surg. George Macaulay, in charge.]

ST. JOHNS RIVER INSPECTION STATION,
July 23, 1904.

SIR: I herewith transmit the annual report of all transactions at this station during the past fiscal year ended June 30, 1904.

The statistical reports show a decided increase of "vessels spoken and passed" and "sailing vessels inspected and passed," as compared with similar statistical report for the fiscal year ended June 30, 1903.

Respectfully,

GEORGE MACAULAY,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

[Inclosure.]

Transactions at St. Johns River National Inspection Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	41	35	31	34	0	0	0	0	0	29	27	23	210
Steamers inspected and passed.....	0	0	0	0	0	0	1	0	1	2	1	0	5
Steamers disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Sailing vessels inspected and passed.....	4	3	7	7	3	13	10	10	12	7	3	6	85
Sailing vessels disinfected.....	0	0	0	0	0	0	0	1	0	0	0	0	1
Crew on steamers.....	20	103	89	110	0	0	19	0	20	120	85	49	621
Crew on sailing vessels.....	313	144	277	256	22	102	66	78	85	218	186	208	1,95
Passengers on steamers.....	0	2	0	0	0	0	0	0	0	11	6	0	19
Passengers on sailing vessels.....	6	9	5	15	13	3	5	4	5	17	5	19	106

KEY WEST.

[Key West Quarantine; post-office address, Key West, Fla.]

[Report of Sanitary Inspector J. Y. Porter, in temporary charge.]

KEY WEST QUARANTINE, *June 30, 1904.*

SIR: I have the honor to inclose a statistical table of the quarantine transactions of this port for the year ending June 30, 1904.

There have been no unusual occurrences in quarantine management and procedure during the year; no arrivals of infected vessels nor of vessels requiring disinfection. As was remarked in the last annual report of this character, the cleaning up of Habana and the seaports of Cuba, with the extermination of yellow fever, quarantine supervision of this port with the other ports of Florida extending to the Chhattahoochee River, Carrabelle and Apalachicola, has reduced the care, anxiety, and vigilant tension which formerly existed each summer season to almost a minimum in oversight of arrivals.

The commerce of Key West is mainly with domestic ports, and with Cuba, Habana. A weekly line, Mallory, plies between New York and Galveston, Tex., stopping at Key West both in coming and returning. The Peninsular and Occidental Steamship Company operates the mail line between Florida and Habana, stopping at Key West both ways, and from both sides of the peninsula, from Tampa and from Miami. From Tampa there are three trips a week by these steamers, and from Miami two. Fruiters, sailing, make trips from Bonaco, a small island off the coast of British Honduras, bringing mostly bananas, and an occasional sail craft arrives from Nassau, with fruit and passengers. The fruiters from the coast of British Honduras bring no passengers, as a rule. Now and again a supercargo may come with his fruit, but these visits are rare. It will be understood therefore that with Cuba entirely free from yellow fever there is no occasion for apprehension of yellow fever introduction in Key West, because of the lack of communication with ports under suspicion of that disease.

Although relief from yellow fever has been afforded through its elimination from Cuba, yet the steamers arriving therefrom, as well as from other foreign ports, are carefully inspected for the other quarantinable diseases. From Cuba there is reason to fear introduction of tuberculosis and leprosy, and the latter-named disease also from Nassau, Bahamas. Therefore the passenger list is scanned carefully for these diseases, and, when found, report is made to the immigration agent, who then refers the cases to the surgeon of the Service having this department in charge for his determination and disposition.

There has been no construction of buildings for this station during the year nor has any money been expended for improvement or repairs other than the usual monthly expenditures for the care and safe-running of the naphtha boarding launch and rentals of dock and boathouse space for the shore disinfecting machinery and the boarding launch.

It is to be regretted that it is impossible to obtain a suitable site along the northern and southwestern water front of the town on which a boathouse can be erected which will meet the requirements of the quarantine service of this port. The space from the "bight," on the northeastern face of the island, extending around the water front to the marine-hospital property is all taken up by private corporations and by the Navy Department, and it is impossible to acquire by purchase an inch of this property. There is an excellent basin on the Navy Department water property where a safely protected boathouse could be built and where boarding facilities would be especially adapted for prompt and speedy service to arrivals, but I am informed that it would not be possible to obtain any concession from the Navy Department for the permanent use of this water front, because it is contemplated to "fill in" at that point for foundation of coal sheds and other attachments of a naval station. When writing on this subject last year, in a lengthy and exhaustive report, it was pointed out that the property of the marine hospital was unsuited to the purpose, because, first and principally, the rapid shoaling of the water off the breakwater of the hospital grounds, due to the construction of the navy coal sheds out in the harbor to the eastward of the hospital and Fort Taylor to the southwest of the hospital, both of which serve to throw in the sand from the channel toward the shore, and to build a dock to or near to the channel would be an expensive procedure both in construction and afterwards in maintaining. The

second objection to the hospital property as a site for a boathouse for quarantine boarding purposes is the exposure to the open and main roadstead of the harbor, demanding a building at this point of more than usual strength to withstand wind and water from southwest storms.

An effort has been made to engage the commercial attention of parties owning water-front property to build a suitable boathouse and rent the same at a fair and reasonable rental to the quarantine service. It was thought at one time that such a proposition had been accepted, but the plan has unfortunately fallen through, and efforts will have to be directed to another source.

The disinfecting barge *Protector* and the schooner *Glacier* are both temporarily attached to this station and are anchored in the harbor with care takers. The *Protector* has been overhauled and repaired during the year, by replacing worm-sucked planking with new and by recaulking and remetaling both hull and topsides, besides renewing other minor unsound parts. It is feared, however, that the timbers of the barge, which are of white oak, are not in a sound condition, as the examination of those under worm-sucked planking which was removed to replace with sound wood showed a punk-rotten condition, requiring new timbers at those points. It is conjectured therefore that the same condition may exist at other parts of the vessel where the planking was not removed for examination. The interior of the boat is well kept and is clean and bright. The schooner *Glacier* formerly was a "tender" to the Tortugas Quarantine Station. She is a fast-sailing craft, but draws too much water except for stations having great depth of approach. The *Glacier* needs "coming out" of water to be cleaned, which has been recommended. The boat is coppered. The boat is also well equipped with almost new sails and could be placed in commission at early notice.

A new boarding launch is needed for the station, as the launch *Annie* has been inspected and condemned, and is being now run at some risk both from fire and sinking, as the forward bulkhead, containing the naphtha tank, leaks water into the main body of the boat, making frequent bailings necessary. It is understood that a new launch has been authorized and ordered especially constructed for this station.

Respectfully,

JOSEPH Y. PORTER,
Sanitary Inspector.

The SURGEON-GENERAL.

[Inclosure.]

Transactions at Key West, Fla., National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed													
Steamers inspected and passed	35	36	19	22	13	14	17	14	15	27	32	34	273
Steamers disinfectected													
Sailing vessels inspected and passed	23	26	10	14	9	11	13	9	14	12	22	15	189
Sailing vessels disinfectected													
Crew on sailing vessels	188	222	671	818	642	713	1,322	671	737	1,059	1,323	1,305	11,094
Passengers on sailing vessels	174	277	63	88	37	70	89	23	130	75	163	129	1,322
Passengers on steamers	620	436	888	439	349	632	1,015	1,071	1,208	687	1,494	532	9,015
Passengers on sailing vessels	49	32	37	57	39	32	39	39	35	67	60	67	694

J. R. MAJONET,
Acting Assistant Surgeon, Boarding Officer.

BOCA GRANDE.

[Boca Grande Quarantine; post-office address, via Punta Gorda, Fla.]

[Report of Acting Asst. Surg. B. B. Blount, in charge.]

Transactions at Boca Grande National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	3	2	3	0	3	2	2	1	2	3	1	2	24
Steamers inspected and passed.....	0	0	0	0	1	0	0	0	2	0	0	0	3
Steamers disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Sailing vessels inspected and passed.....	2	1	1	0	2	0	3	1	1	1	0	5	17
Sailing vessels disinfected.....	0	1	0	0	0	0	0	0	0	0	0	0	1
Crew on steamers.....	0	0	0	0	24	0	0	0	99	0	0	0	123
Crew on sailing vessels.....	23	18	11	0	23	0	31	9	11	9	0	45	182
Passengers on steamers.....	0	0	0	0	0	0	0	0	15	0	0	0	15
Passengers on sailing vessels.....	0	0	0	0	0	0	0	0	0	0	0	0	0

CEDAR KEYS, FLA.

Under date of June 30, 1904, the acting assistant surgeon in charge of quarantine at Cedar Keys, Fla., reported there had been no transactions during the fiscal year ended June 30, 1904.

ST. GEORGES SOUND.

[St. Georges Sound Quarantine (East and West Pass), Carrabelle, Fla.]

[Report of Acting Asst. Surg. E. L. Stewart, in charge.]

ST. GEORGES SOUND QUARANTINE, *July 1, 1904.*

SIR: I have the honor to inclose statement of transactions at St. Georges Sound Quarantine for the fiscal year ended June 30, 1904.

There was nothing done at West Pass except under the head of "spoken and passed." All the inspection is done at East Pass.

Respectfully,

E. L. STEWART,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

[Inclosure.]

Transactions at St. Georges Sound National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	5	6	0	0	3	0	3	0	0	3	1	1	22
Steamers inspected and passed.....					1				1				2
Steamers disinfected.....													
Sailing vessels inspected and passed.....	3	1	0	3	7	4	6	4	5	4	5	4	46
Sailing vessels disinfected.....					20				20				40
Crew on steamers.....					99	36	57	41	64	31	72	51	540
Crew on sailing vessels.....	48	37	0	24	1								1
Passengers on steamers.....													
Passengers on sailing vessels.....													

SANTA ROSA.

[Santa Rosa Quarantine; post-office address, via Pensacola, Fla.]

[Report of Acting Asst. Surg. R. C. White, in charge.]

SANTA ROSA QUARANTINE, *July 19, 1904.*

SIR: In compliance with Bureau circular letter dated April 18, 1904, I have the honor to transmit herewith report of transactions at this station during the fiscal year ended June 30, 1904.

No quarantinable disease has appeared on any vessel. During the year 19 patients were treated in the station hospital, mainly cases of malarial fevers. One death occurred from the same cause.

Respectfully,

R. C. WHITE,

Acting Assistant Surgeon, in Charge.

The SURGEON-GENERAL.

[Inclosure.]

Transactions at Santa Rosa National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....			1		1			1		1			4
Steamers inspected and passed.....	19	6	10	12	17	29	19	22	21	12	11	16	194
Steamers disinfected.....	9	6	9	6	5	5	0	0	0	8	9	7	64
Sailing vessels inspected and passed.....	5	8	7	7	4	19	10	16	12	8	15	9	120
Sailing vessels disinfected.....	1	4	3	5	5	5	4	6	8	3	4	4	47
Crew on steamers.....	722	371	491	501	629	918	573	641	574	567	572	607	7,166
Crew on sailing vessels.....	80	128	122	147	143	347	175	302	166	144	261	185	2,300
Passengers on steamers.....	3	3	4	0	7	7	5	5	4	2	3	1	44
Passengers on sailing vessels.....	1	1	4	0	0	5	1	0	5	5	5	1	28
Vessels discharging ballast at quarantine.....	3	5	6	7	3	8	6	7	3	6	9	8	71

NOTE.—Besides the number of passengers enumerated on steamers and sailing vessels there were the following stowaways:

On steamers:		On sailing ships:	
November, 1903.....	1	October, 1903.....	1
January, 1904.....	1	December, 1903.....	4
February, 1904.....	1	February, 1904.....	3
April, 1904.....	1	June, 1904.....	3
May, 1904.....	2		
June, 1904.....	1	Total.....	11
Total.....	7		

BISCAYNE BAY.

[Biscayne Bay Quarantine; post-office address, via Miami, Fla.]

[Report of Acting Asst. Surg. James M. Jackson, jr., in charge.]

Transactions at Biscayne Bay National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	8	9	2	11	9	16	16	15	15	30	78	67	276
Steamers inspected and passed.....	0	0	0	0	0	4	14	20	22	13	1	0	77
Steamers disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Sailing vessels inspected and passed.....	1	0	0	8	2	1	1	0	1	1	1	1	12
Sailing vessels disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Crew on steamers.....	0	0	0	0	0	250	685	992	1,091	644	50	0	3,712
Crew on sailing vessels.....	14	0	0	23	14	8	4	0	10	4	3	5	85
Passengers on steamers.....	0	0	0	0	0	56	217	1,066	1,645	366	13	0	3,393
Passengers on sailing vessels.....	0	0	0	36	14	6	0	0	9	2	0	0	67

PASCAGOULA.

[Pascagoula, Miss., Quarantine.]

[Report of Acting Asst. Surg. B. F. Duke, in charge.]

Transactions at Pascagoula National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	5	2	2	5	0	2	0	1	2	1	4	3	27
Steamers inspected and passed.....						1			1	1			3
Steamers disinfected.....													
Sailing vessels inspected and passed.....	7	3	5	10	8	12	18	12	8	5	10	4	102
Sailing vessels disinfected.....													
Crew on steamers.....			15			23			25	23			86
Crew on sailing vessels.....	108	45	63	140	77	120	168	117	95	49	126	63	1,171
Passengers on steamers.....													
Passengers on sailing vessels.....									1		1		2

GULF.

[Gulf Quarantine; post-office address via Biloxi, Miss.]

[Report of medical officer in command, Passed Asst Surg. S. B. Grubbs. Assumed command under official order of April 18, 1902.]

GULF QUARANTINE, July 1, 1904.

SIR: I have the honor to make the following report of transactions at this station for the year ending June 30, 1904, as per attached table.

Four cases of yellow fever were received and treated in the station hospital. Of these, 2 died and 2 recovered.

Several cases of malaria, 1 case of lobar pneumonia, and 1 case at first supposed to be bubonic plague were also treated.

As will be noted, 262 vessels arrived at the station, of which 75 (14 steamers and 61 sailing vessels) were disinfected.

This is a decided increase over the two previous years, and owing to the great proportionate increase of large sailing vessels and steamers the tonnage has increased to a much greater extent.

The total tonnage arriving during the year just closed was 264,124, of which 62,517 were disinfected.

Respectfully,

S. B. GAUBES,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

[Inclosure.]

Transactions at Gulf National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	1	1	0	0	0	0	0	0	0	0	0	0	2
Steamers inspected and passed...	8	6	5	6	6	10	2	8	5	4	5	7	72
Steamers disinfected.....	4	3	0	0	2	2	0	0	0	3	0	0	14
Sailing vessels inspected and passed.....	9	6	10	8	9	12	13	8	4	13	7	14	113
Sailing vessels disinfected.....	8	4	5	2	4	4	6	3	1	4	9	11	61
Crew on steamers.....	319	238	115	133	190	248	111	180	119	160	127	173	2,140
Crew on sailing vessels.....	168	96	136	131	156	202	175	143	68	230	176	278	1,971
Passengers on steamers.....	1	4	0	0	0	0	0	0	0	0	1	5	11
Passengers on sailing vessels...	4	1	1	1	1	3	4	3	0	3	0	1	22

SAN DIEGO.

[San Diego Quarantine; post-office address, via San Diego, Cal.]

[Report of medical officer in charge, Acting Asst. Surg. W. W. McKay. Assumed charge under official orders of April 4, 1889.]

SAN DIEGO QUARANTINE, *July 1, 1904.*

SIR: In compliance with instructions contained in Bureau circular letter of date April 18, 1904, I have the honor to submit herewith report of transactions of this station for the fiscal year ended June 30, 1904.

As will be noted by the statistical table herewith inclosed, 122 vessels were inspected and passed, 2 navy vessels spoken and passed, and 2 steamers disinfected, making a total of 126 for the year, 96 of which were steamers.

By request of their respective commanding officers assistance was rendered during the year in three instances to training ships of the United States Navy in checking epidemics of measles and diphtheria which had broken out aboard. In the case of the one having measles aboard the sick and suspects were isolated in tents ashore, their quarters on the vessel disinfected, and the convalescents before being allowed to return to the ship were bathed, their clothing, baggage, and bedding disinfected; no further cases appeared. In the other two instances diphtheria had broken out aboard, deaths had occurred, new cases appearing daily, and matters looked serious. By advice of the quarantine officer the vessel in these cases was depopulated at once, only two officers and four of the crew being left on the spar deck, quartered under tents to look after the vessel, the

entire personnel being taken ashore and bathed, and baggage, clothing, and bedding disinfected. After careful inspection those who appeared in good health were quartered ashore in the steerage passengers' detention barracks; six officers were quartered in the women's room of the detention barracks, in order to be near at hand to maintain discipline among the crew and apprentices. The commander of the vessel was quartered in a small room upstairs in the hospital. The medical officer of the ship, together with his apothecary, nurse, cook, the captain's boy, and one seaman ill with adenitis, were quartered in the hospital. The diphtheritic cases and suspects with their attendants were isolated in tents in separate parts of the grounds. The ship (after all bright metal work and the guns had been smeared with a mixture of tallow and linseed oil or tallow and white lead and all sulphuric ether, which was found stored away in 2,000 c. c. tin cans and which boils at 34° to 35° C. had been removed) was thoroughly disinfected in every part with sulphur dioxide, in order to kill vermin (with which the ship was overrun, she being an old wooden vessel) as well as to disinfect the vessel. The removal of the sulphuric ether was shown to have been a wise precaution, as after the disinfection the self-registering thermometers in the powder magazine showed the temperature to have been 98°F.—this in the closed magazine below water line, where it was naturally bound to remain cooler than on the gun and berth decks, where the 36 sulphur pots were burning. The ether was in a locker on the berth deck. Cultures on blood serum were made from the throats of all suspects, diphtheria cases, and convalescents. Anti-diphtheritic serum was administered immediately upon the discovery of new cases and pushed vigorously in all the worst ones. Thorough examination of the personnel of the ship was made morning and evening. If suspects were found, they were immediately isolated and cultures taken from their throats. At the end of twelve days, no new cases having occurred among those quartered in the detention barracks, they were returned to the clean ship. The convalescents were detained isolated ashore until such time as no virulent bacilli could be detected in cultures made from their throats, when they, too, with their nurses and attendants were bathed, their clothing, baggage, and bedding disinfected, and all returned to the vessel. No further cases occurred among that lot of apprentices. The naval authorities furnished their own subsistence, medicines, medical attendance, nurses, and fuel. The disinfection of the vessels and of the effects, clothing, and bedding of the crews was accomplished by the station force under supervision of the quarantine officer. Altogether 400 officers and crew were bathed and effects disinfected. All disinfectants were supplied by the quarantine station.

On account of the location here of a large coaling station and a naval training station, the harbor entrance having been deepened to 30 feet of water at mean low tide, the work of this station will probably increase in the near future. Our relations with the Navy are most pleasant and they seem to fully appreciate what is done for them by this Service, also with municipal and State health authorities, as they are with the local Immigration Service officials. In addition to the quarantine work at this port the medical inspection of immigrants is made for the Immigration Service by the quarantine officer. The assurance of the early completion of the Panama Canal, the past appearance of plague in epidemic form and its liability to recrudescence on the Pacific coast of Mexico and Central and South America render it highly necessary that this station be a complete and well equipped one.

Respectfully,

The SURGEON-GENERAL.

W. W. McKAY,
Acting Assistant Surgeon.

[Inclosure.]

Transactions at San Diego (Cal.) National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....				1		1							2
Steamers inspected and passed.....	7	7	10	9	6	7	6	6	7	8	8	8	89
Steamers disinfected.....	1							1					2
Sailing vessels inspected and passed.....	6	4	2	1	4	3	3	2	4	1	1	2	33
Sailing vessels disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Crew on steamers.....	586	342	394	417	102	306	102	292	155	415	412	180	3,708
Crew on sailing vessels.....	58	12	64	7	54	17	10	47	58	2	3	2	334
Passengers on steamers.....	161	150	127	140	145	102	120	147	164	170	105	99	1,630
Passengers on sailing vessels.....	0	5	0	0	0	1	1	1	0	0	6	0	14

LOS ANGELES.

[Los Angeles Quarantine; post-office address, via Los Angeles, Cal.]

[Report of Acting Asst. Surg. M. H. Ross, in temporary charge.]

LOS ANGELES, CAL., July 2, 1904.

SIR: Replying to circular letter of April 18, 1904, I have the honor to inclose in duplicate the report of transactions for this station for the fiscal year ended June 30, 1904, and to state that there were more vessels inspected this year than in any previous year, carrying more crew and cargo.

In the matter of repairs and improvements would state that we have received the regulation quarantine flags and a copy of the Quarantine Laws and Regulations of 1903 edition, and that the railroad company has painted and put a flag-staff in the boat used for the quarantine officer at Port Los Angeles.

Respectfully,

M. H. Ross,
Acting Assistant Surgeon.

The SURGEON-GENERAL.

[Inclosure.]

Transactions at Los Angeles (Cal.) National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	3	2	4	1	4	1	3	5	3	5	2	3	36
Steamers inspected and passed.....	1	1	3	0	0	0	0	3	0	0	0	2	10
Steamers disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Sailing vessels inspected and passed.....	2	1	1	1	4	1	3	2	3	5	2	1	26
Sailing vessels disinfected.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Crew on steamers.....	39	35	108	0	0	0	0	171	0	0	0	70	423
Crew on sailing vessels.....	55	28	29	21	101	13	77	47	75	137	61	14	659
Passengers on steamers.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Passengers on sailing vessels.....	0	0	0	0	0	0	0	0	0	0	0	2	2

SAN FRANCISCO.

[San Francisco Quarantine; post-office address, via Angel Island, Cal.]

[Report of medical officer in command, Passed Asst. Surg. Hugh S. Cumming. Assumed command under official orders of December 28, 1901.]

SAN FRANCISCO QUARANTINE, June 30, 1904.

SIR: I have the honor to submit the following report of the transactions at this quarantine station during the year ended June 30, 1904:

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	1	1	1	3	0	0	0	0	3	0	0	0	9
Steamers inspected and passed.....	49	34	39	39	36	35	35	32	37	33	32	37	438
Steamers disinfected.....	4	8	3	3	0	3	0	0	0	1	2	2	21
Sailing vessels inspected and passed.....	48	52	73	58	41	36	18	19	29	22	26	23	445
Sailing vessels disinfected.....	4	2	4	0	0	1	0	0	0	0	1	1	18
Crew on steamers.....	3,618	2,615	3,513	2,923	2,861	2,799	2,968	2,365	2,913	3,251	2,591	3,297	35,714
Crew on sailing vessels.....	727	1,154	3,181	1,408	1,190	667	458	408	473	389	409	363	10,821
Passengers on steamers.....	3,711	4,770	5,716	4,882	5,188	4,512	3,824	2,718	4,046	4,979	5,575	4,960	54,881
Passengers on sailing vessels.....	98	78	2,847	791	246	40	11	41	9	43	51	83	4,338
Vessels from ports infected with cholera and plague.....	33	22	24	27	12	29	16	24	19	21	21	26	274
Vessels from yellow-fever ports.....	14	6	8	7	5	7	5	7	7	8	7	7	88
Persons detained in quarantine.....	736	552	580	276	0	184	0	0	614	275	124	1,016	4,357
Cases treated in isolation hospitals.....		1	3								1		5
Vessels held for diagnosis.....		1	1		2								4

During the year 917 vessels (459 steamers and 458 sailing vessels) were inspected and 34 vessels were disinfected. Upon these vessels a total of 105,754 persons (46,535 crew and 59,219 passengers) were inspected and 4,357 were detained in quarantine.

One case each of yellow fever, leprosy, and septicæmia, and two of malaria, were treated in hospitals; there was one death from yellow fever.

In addition to the above, 10 vessels lying in the Straits of Carquinez, off Martinez, were inspected, and 5 fumigated to kill vermin, by request of the State board of health.

Four vessels were detained pending a diagnosis of suspected cases, one of which, the case of septicæmia mentioned above, clinically somewhat resembled pest. This case was later determined to have been due to a pneumococcus infection, the diagnosis being confirmed by Asst. Surg. D. H. Currie.

To better guard against the possibility of infection by means of rats passing from vessels to the docks, a circular letter was sent by me to the representatives of the various transportation companies having vessels from the ports of the Orient, Australia, and South America, directing the use of rat guards on lines, hoisting gang planks, etc., at night. The aid of the customs officials was requested to assist in this work, to which the collector of customs heartily agreed.

The west coast of South America continues to be a menace, and disinfection of vessels therefrom has been continued.

The quarantine officer was invited to and became a member of the public health commission of California, and by request delivered an address before that body, giving an account of the work done both at this port and at ports of departure for the protection of this State, and received a vote of thanks.

Representatives of the State and city boards of health, including the president of the State board and city health and sanitary officers, visited the station by invitation.

The relations of the station with all the coordinate branches of the Federal departments and State and municipal authorities continue friendly.

Respectfully,

HUGH S. CUMMING,
Passed Assistant Surgeon, in Command.

The SURGEON-GENERAL.

EUREKA.

[Eureka (Cal.) Quarantine.]

[Report of Acting Asst. Surg. B. Y. Harris, in charge.]

Transactions at Eureka (Cal.) National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed													
Steamers inspected and passed													
Steamers disinfected													
Sailing vessels inspected and passed	6	2	3	2	3		2	3		2		1	24
Sailing vessels disinfected	3	1	1										5
Crew on steamers													
Crew on sailing vessels	118	35	46	28	31		29	23		22		8	340
Passengers on steamers													
Passengers on sailing vessels	6		2		3			2		1			14

COLUMBIA RIVER.

[Columbia River Quarantine; post-office address, via Astoria, Oreg.]

[Report of medical officer in command. Asst. Surg. Baylis H. Earle. Assumed command under official orders of November 28, 1900.]

COLUMBIA RIVER QUARANTINE, July 1, 1904.

SIR: I have the honor to submit the following report of the transactions of the Service at this station during the fiscal year ended June 30, 1904:

Sanitary.—The British ship *Agnes Oscald*, which had arrived at this port June 16, 1903, from Honolulu, H. I., was still being held under seven days' observation at the close of the fiscal year ended June 30, 1903, and was released from quarantine July 3, 1903. An account of the detention and disinfection of this vessel was given in my annual report of the transactions of the Service at this station during the fiscal year ended June 30, 1903.

Sixty-nine vessels of all classes arrived at this port during the fiscal year just closed for quarantine inspection, of which number 64 were inspected and passed and 5 were detained. Of those detained 1 was from Honolulu, H. I., a plague-infected port; 1 from Nushignak, Alaska, of which port the health conditions were unknown; 1 from Shanghai, China, a cholera-infected port; 1 from East London, South Africa, a plague-infected port, and 1 from Hongkong, China, a plague and smallpox infected port. Histories of these will be given separately and in detail.

The American schooner *David Evans*, of 748 net tons, arrived in thirty-one days out from Honolulu, H. I., July 17, 1903, with 12 men and 60 tons of rock ballast on board, 1 of the 12 men being a stowaway. On examination, the men were found to be in good health and the vessel mechanically clean. However, the bill of health, signed by Passed Asst. Surg. L. E. Cofer, of the Service, stated that the crew and their effects had been only partially disinfected and recommended the disinfection of the entire crew and their effects on arrival at this port. Because of this fact, and also because of the presence on board of the stowaway, who had not been seen by the quarantine officers at Honolulu, it was decided not only to bathe the entire crew and disinfect their effects, but also to disinfect the entire vessel on which the crew and stowaway had been working.

Accordingly, the vessel was remanded to the quarantine station, disinfected, and then held under seven days' observation and released July 27, 1903.

The British bark *Australia*, of 2,097 net tons, arrived in forty-seven days out from Shanghai, China, September 7, 1903, with 29 men and 1,200 tons of mud ballast on board. On examination, the crew were found to be in good health and the vessel mechanically clean. However, the bill of health, signed by Acting Asst. Surg. S. A. Ransom, of the Service, stated that the ballast had been taken from the river flats below the city, which receive drainage from the city, and that it should therefore be considered dangerous and treated accordingly. The vessel was therefore remanded to the quarantine station and treated the same as was the schooner *David Evans*, mentioned above, the ballast being landed on the beach by means of lighters after having been thoroughly wetted with HgCl_2 solution (1 : 1,000). After disinfection, the vessel and crew were held under five days' observation and then released from quarantine October 3, 1903.

The British ship *Glenesslin*, of 1,644 net tons, arrived in ninety-eight days out from East London, South Africa, December 5, 1903, with 22 men and 850 tons of earth ballast on board. The ballast was taken from the quarry which is situated across the river from East London and which is worked by convicts. On examination, the crew were found to be in good health and the vessel mechanically clean. The American bill of health, dated August 26, 1903, and signed by United States Consular Agent W. H. Fuller, stated that there had been 27 cases of bubonic plague, with 17 deaths, in East London and vicinity, but that there had been no new cases since July 24, 1903, and that the sanitary conditions and histories of the vessel and all on board were good. However, the British bill of health, dated same and signed by H. C. Kolbe, His Majesty's collector of customs, stated that the rats on the wharf at which the vessel lay were infected with plague. As the rat shields placed in evidence and said to have been used were simply small perforated disks of zinc which could not possibly have been made to fit any of the ropes accurately, and over and through which rats might crawl with ease, it was decided to detain and disinfect the vessel and crew. The vessel was accordingly remanded to the quarantine station, where the same processes were gone through as in the cases of the schooner *David Evans* and bark *Australia*, mentioned above, except that only the top layer of the ballast was wetted with the HgCl_2 solution (1 : 1,000) and all of the ballast was allowed to remain in place. The vessel and crew were then held under seven days' observation and released from quarantine December 16, 1903.

The British steamship *Ching Wo*, of 2,517 net tons, arrived in sixty-four days out from Hongkong, China, and eight days out from Manzanillo, Mexico, April 20, 1904, with 52 Chinese and 12 European members of crew and 233 tons of sea-water ballast on board. On examination, the crew were found to be in good health and the vessel mechanically clean. The vessel had come via Moji and Kobe, Japan, and Salina Cruz and Manzanillo, Mexico. Consular bills of health, certified by Service officers abroad, stated that all Asiatics had been bathed and their effects disinfected before embarkation. However, the ship's doctor stated that a few days before reaching Salina Cruz, Mexico, 8 of the Chinese passengers and 1 of the Chinese crew were taken ill with smallpox; that they were at once isolated on the after deck and all hands vaccinated; that the sick were transferred to the hospital on shore immediately after arrival at Salina Cruz, April 5, 1903; that the vessel was then fumigated with SO_2 gas by him, after which it proceeded to Manzanillo, where the remaining Asiatic passengers, 192 in number, were landed; and that twenty days had elapsed since the appearance of the last case when the vessel arrived at this port. The vessel was detained and remanded to the quarantine station, where all persons were again vaccinated and the same processes gone through as in the cases of the vessels mentioned above, except that the water ballast was not disturbed in any way. After the completion of the vaccinations and disinfection, it was not considered necessary to hold the vessel and crew under observation, more than three weeks having elapsed since the appearance of the first case and eighteen days having elapsed since the departure of the last case from the vessel. Accordingly, the vessel and all on board were released from quarantine April 23, 1904.

On November 8, 1903, a letter bearing date of November 7, 1903, was received from Mr. J. H. Barbour, Inspector in charge of the Immigration Service at Portland, Oreg., calling my attention to rule 26 of the Immigration Laws and Regulations, approved August 26, 1903; and, acting under the authority granted by

said rule, directing me thereafter to make an exhaustive and scrupulous mental and physical examination of each alien seaman arriving at this port. Accordingly, from November 18, 1903, to June 30, 1904, I examined 932 alien seamen on 32 vessels, of which number I found 50 seamen to be physically deficient.

Ten new signal-code flags, to complete the old set on hand in accordance with the requirements of the new code of 1903, asked for on special requisition of November 19, 1903, were received December 23, 1903. Ten 3-gallon "Underwriters'" portable chemical fire extinguishers and suitable chemicals for charging same were received February 20, 1904, and placed in proper and convenient positions for use when necessary.

Respectfully,

Baylis H. Earle,
Assistant Surgeon.

The SURGEON-GENERAL.

[Inclosure.]

Transactions at the Columbia River National Quarantine Station for the year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....	5	9	13	10	7	4	4	1	2	7	2	5	69
Steamers inspected and passed.....	1	1	1	3	2	1	1	0	2	3	1	2	18
Steamer disinfected.....	0	0	0	0	0	0	0	0	0	1	0	0	1
Sailing vessels inspected and passed.....	3	8	11	7	5	2	3	1	0	3	1	3	47
Sailing vessels disinfected.....	1	0	1	0	0	1	0	0	0	0	0	0	3
Crew on steamers.....	72	70	63	137	104	66	65	0	124	221	49	85	1,056
Crew on sailing vessels.....	77	161	751	170	101	59	62	26	0	63	25	32	1,527
Passengers on steamers.....	34	55	12	77	65	43	5	0	78	42	0	1	412
Passengers on sailing vessels.....	1	0	6	1	6	4	0	0	0	1	10	0	29

HOQUIAM.

[Hoquiam (Wash.) Quarantine.]

[Report of Acting Asst. Surg. T. C. Frary, in charge.]

Transactions at Hoquiam National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed.....													
Steamers inspected and passed.....													
Steamers disinfected.....													
Sailing vessels inspected and passed.....	2	5		2	2	1	1	6		2	3	3	27
Sailing vessels disinfected.....								1					1
Crew on steamers.....													
Crew on sailing vessels.....	22	52		21	22	8	10	61		21	23	27	273
Passengers on steamers.....													
Passengers on sailing vessels.....													

PORT TOWNSEND AND SUBPORTS.

[Port Townsend Quarantine; post-office address, via Port Townsend, Wash., and subports Seattle, South Bend, and Port Angeles.]

[Report of medical officer in command, Passed Asst. Surg. J. H. Oakley. Assumed command under official orders of May 28, 1903.]

PORT TOWNSEND QUARANTINE, July 1, 1904.

SIR: I have the honor to report on the transactions at this quarantine station during the fiscal year ending June 30, 1904, as follows:

The total number of vessels boarded was 324, of which 149 were steamers and 175 sailing vessels. Of the total number of vessels boarded, 312 were inspected and passed and 11 (all sailing vessels) were sent to quarantine for disinfection of holds and fore-castle quarters. One steamer was fumigated for destruction of rats after she had discharged her cargo at the Tacoma docks. Special precautions against the landing of rats were taken with three steamers at the Seattle and Tacoma docks. Attendants served as guards on the four steamers above mentioned. The total number of persons composing the crews of the 324 vessels was 15,250, and 19,622 passengers were inspected. The glandular regions of all male steerage passengers and of the crew of all vessels from plague-infected ports were examined. On April 13, 1904, a sailor from the steamer *Senator*, that had just arrived in Seattle from San Francisco, via Victoria and this port, applied at the Seattle office of this Service for treatment of a skin disease. It was discovered that he had smallpox, and he was sent to the pesthouse.

The contacts aboard the vessel were vaccinated, and the part of the vessel occupied by the man was disinfected under the supervision of the officer of this Service on duty at Seattle.

The case of smallpox from the United States Fish Commission steamer *Albatross*, made mention of in my last annual report of transactions, was discharged recovered on July 15, 1903. No other case developed on the *Albatross*, and she completed her cruise to Alaskan waters.

On October 6, 1903, a seaman on the British ship *Dunfermline*, discharging ballast at quarantine, fell down the hold and was killed; his remains were interred in the quarantine cemetery.

Respectfully,

J. H. OAKLEY,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

[Inclosure.]

Transactions at Port Townsend (Wash.) National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total
Vessels spoken and passed.....													
Steamers inspected and passed....	17	16	11	16	12	12	14	9	10	9	11	11	148
Steamer disinfected.....	0	0	1	0	0	0	0	0	0	0	0	0	1
Sailing vessels inspected and passed.....	21	19	17	16	19	11	12	17	6	14	5	7	164
Sailing vessels disinfected.....	2	3	2	2	0	0	0	0	1	1	0	0	11
Crew on steamers.....	1,284	1,243	1,063	1,228	961	1,116	1,212	717	764	802	879	1,030	12,289
Crew on sailing vessels.....	422	410	311	298	332	200	194	253	123	243	57	127	2,970
Passengers on steamers.....	1,976	2,012	2,212	2,532	2,177	1,468	1,286	821	999	1,226	1,064	1,759	19,512
Passengers on sailing vessels.....	20	7	10	15	18	4	2	13	9	4	4	4	110

PORT TOWNSEND QUARANTINE, July 15, 1904.

SIR: I have the honor to transmit herewith annual reports of transactions at the substations of Port Angeles and Southbend, Wash., for the fiscal year ending June 30, 1904.

Respectfully,

J. H. OAKLEY.

Passed Assistant Surgeon.

The SURGEON-GENERAL.

[Inclosure.]

Transactions at Seattle (Wash.) National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed													
Steamers inspected and passed	1	2	2	3	3	3	2	1	1			1	19
Steamers disinfected													
Sailing vessels inspected and passed				1	11	2	2		1				17
Sailing vessels disinfected													
Crew on steamers				268	171	346	190	89				99	1,163
Crew on sailing vessels				26	263	81	44		15				379
Passengers on steamers	58	166	196	230	206	244	96	130	3			158	1,484
Passengers on sailing vessels													

CHAS. H. ELLIOTT,

Acting Assistant Surgeon in Temporary Charge.

[Inclosure.]

Transactions at South Bend (Wash.) National Quarantine Station for year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed													
Steamers inspected and passed													
Steamers disinfected													
Sailing vessels inspected and passed				1							1		2
Sailing vessels disinfected													
Crew on steamers													
Crew on sailing vessels				10							11		21
Passengers on steamers													
Passengers on sailing vessels													

[Inclosure.]

Transactions at Port Angeles (Wash.) National Quarantine Station for the year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Vessels spoken and passed													
Steamers inspected and passed													
Steamers disinfected													
Sailing vessels inspected and passed		1	1		1		1						4
Sailing vessels disinfected				1									1
Crew on steamers													
Crew on sailing vessels		19	18	27	18		11						83
Passengers on steamers													
Passengers on sailing vessels					1								1

F. S. LEWIS,
Acting Assistant Surgeon.

SITKA, ALASKA.

[Sitka (Alaska) Quarantine.]

[Report of Acting Asst. Surg. J. C. Koosher, in charge.]

Transactions at Sitka (Alaska) National Quarantine Station for the year ending June 30, 1904.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	Total.
Steamers inspected and passed	16	14	11	13	13	12	18	18	11	15	11	14	156
Steamers disinfected													
Sailing vessels inspected and passed												1	1
Sailing vessels disinfected													
Crews on steamers	731	518	314	445	420	396	418	483	352	556	402	602	5,637
Crews on sailing vessels												27	27
Passengers on steamers	624	581	318	491	464	385	248	220	272	722	545	536	5,365
Passengers on sailing vessels													

TEXAS-MEXICAN BORDER QUARANTINE.

(See under heading "Yellow fever," for report of that disease at Laredo, Mexico.)

to the Bureau, and in this way concerted action can be taken on questions without any possibility of friction.

During the year the Surgeon-General was requested to act with Doctor Walcott, of the Massachusetts State board of health, as a committee to suggest to the city of Columbia, S. C., names of those best fitted to serve on a proposed expert board for the consideration of a source and system of water supply for that city. Through this concert of action a number of eminent waterworks and sanitary engineers were suggested for the action of the city council of Columbia.

SPOTTED FEVER.

For a number of years a disease of mysterious nature and attended by considerable mortality has annually made its appearance in the spring of the year in the Bitter Root Valley of Montana, and while some attempts have been made to investigate its nature and to suggest measures for its suppression, they have so far met with only a limited amount of success.

On May 2, 1904, Dr. Charles Wardell Stiles, chief of the division of zoology of the Hygienic Laboratory, was detailed to visit Missoula, Mont., to continue the investigations from a zoological point of view.

Doctor Stiles reached Missoula on May 7, and remained on the ground until July 6, 1904.

He has made the following preliminary report:

PRELIMINARY REPORT UPON A ZOOLOGICAL INVESTIGATION INTO THE CAUSE, TRANSMISSION, AND SOURCE OF THE SO-CALLED SPOTTED FEVER OF THE ROCKY MOUNTAINS.

HYGIENIC LABORATORY,
Washington, D. C., July 22, 1904.

The SURGEON-GENERAL.

(Through Director Hygienic Laboratory.)

SIR: In accordance with Bureau instructions, dated May 2, 1904, I visited the Bitter Root Valley, Montana, to study the so-called "spotted fever" ("tick fever," "*Pyroplasma hominis*"), from a zoological point of view, and remained in that locality from May 7 to July 6, 1904. In view of the fact that it will require several months for me to prepare my final report upon the work undertaken, I have the honor to transmit herewith a brief summary of the results thus far obtained.

1. I saw 10 cases of this disease and was able to study 9 of them more or less in detail, but I obtained only 1 necropsy.

2. I have been unable to confirm the hypothesis that this spotted fever is caused by a *Pyroplasma*, that it is transmitted by ticks, and that it originates in spermophiles (popularly known as "gophers").

3. Even if it is admitted that a *Pyroplasma* occurs in the spermophiles and that I have overlooked it, it seems a priori very improbable, from our present knowledge of this genus, that such a parasite of rodents would develop in man, since Smith was not able to infect sheep with *Pyroplasma* from cattle.

4. I find rather serious arguments, of a zoogeographic nature, indicating that "spotted fever" originates in spermophiles.

5. The spermophiles in the Bitter Root Valley are frequently infested with fleas and lice, less frequently with ticks, so that even if there is a *Pyroplasma*, the tick is not the only arthropod which must be considered as the possible intermediate host, although a priori conclusion of course be in favor of the tick.

6. The tick most common in the valley is a dermacentor, which is allied to *D. reticulatus*. The data now at my disposal indicate that it represents a distinct species.

7. These ticks are common on horses, cattle, and dogs,

frequent on heat, the
newest of them
are not entirely
lost for the time

8. I was the
provided by

9. I had rather
nature which is
of the most common

10. I was to a local
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11. A certain clinical feature
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disease is due to a *Py. m.*

12. The nervous system is the
the pathology accounts of the

13. Necrosis of the
which could be interpreted as

14. My work is limited to the
concerned the greater part of the
present theories regarding the
five years

15. The first theory has been
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frequent on man, but there is nothing to indicate that a hibernating animal is necessary for their development; in fact, indications (seasonal distribution) are not entirely lacking that the spermophile forms a more or less accidental host for this species.

8. I was unable to confirm the view that all cases of "spotted fever" are preceded by tick bites. In five of the ten cases I saw I was unable to establish a history of tick bite.

9. I find rather serious arguments of a zoogeographic as well as of seasonal nature which fail to support the view that ticks form the transmitting agent of "spotted fever."

10. Despite a total of at least one hundred hours' microscopic work on fresh blood, taken at various times night and day from 9 cases, I have been unable to find any structure which I can interpret as a protozoon. Likewise one hundred hours' work on stained blood from 10 cases gave negative results.

11. Certain clinical features of the disease, notably the thickened condition of the blood and the condition of the urine, do not support the view that this disease is due to a *Pyroplasma*.

12. The nervous symptoms noticed this year were greatly in excess of what the published accounts of the disease had led me to expect.

13. Necropsy (1 case) did not show any lesions in the central nervous system which could be interpreted as meningitis.

14. My work is negative, so far as cause, treatment, and prevention are concerned; the greater part of my time was, of course, occupied in testing the present theories regarding the disease, and my results are entirely of a destructive nature.

15. The tick theory has caused serious financial loss to the Bitter Root Valley and has produced an effect which in a few cases bordered on hysteria. In justice to the property interests of the valley and the peace of mind of the inhabitants, I think no time should be lost in publishing the statement that the results of study this year have absolutely and totally failed to confirm this hypothesis.

16. I am under numerous obligations to the physicians of the valley, particularly to Dr. J. J. Buckley, for many courtesies extended to me in connection with my work, and I shall look forward with pleasure to acknowledging the indebtedness more in detail in my final report.

SECOND GENERAL INTERNATIONAL SANITARY CONVENTION OF AMERICAN REPUBLICS.

The Second Convention of American Republics was to have been held in Santiago de Chile on March 15, 1904, but owing to the prevalence of yellow fever upon the Texas-Mexican border in the fall of 1903 and the repressive measures which were necessary during the winter of 1903 and the spring of 1904 to prevent a recrudescence of the disease, it was impracticable for the Surgeon-General of the Public Health and Marine-Hospital Service, who is also chairman of the international sanitary bureau, to be absent from his post of duty for the time necessary to attend a meeting at such a distance. It was thought, also, that for the same reason the Mexican national health authorities would probably be unable to attend. Upon consultation, therefore, with members of the international sanitary bureau it was unanimously agreed to postpone the meeting, which it is now contemplated to hold in Santiago de Chile in April, 1905.

SECOND ANNUAL CONFERENCE OF STATE HEALTH OFFICERS WITH THE UNITED STATES PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

In accordance with the provisions of section 7 of the act of Congress approved July 1, 1902, entitled "An act to increase the efficiency and

change the name of the Marine-Hospital Service," the second annual conference of State health authorities with the Public Health and Marine-Hospital Service was held in Washington on June 3, 1904, being called to order at 10 o'clock a. m. The meeting was held at the New Willard Hotel, the Surgeon-General presiding, and Asst. Surg. Gen. H. D. Geddings assisting him as secretary.

The delegates present were: Dr. N. K. Foster, Sacramento, Cal.; Dr. C. E. Cooper, Denver, Colo.; Dr. C. A. Lindsley, New Haven, Conn.; Dr. E. W. Cooper, Camden, Del.; Dr. Wm. C. Fowler, 1141 Fifth street NW., Washington, D. C.; Dr. J. Y. Porter, Key West, Fla.; Dr. Charles B. Cooper, Honolulu, Hawaii; Dr. J. N. Hurty, Indianapolis, Ind.; Dr. F. W. Powers, Waterloo, Iowa; Dr. Edmond Souchon, New Orleans, La.; Dr. John S. Fulton, Baltimore, Md.; Dr. H. B. Baker, Lansing, Mich.; Dr. H. M. Bracken, St. Paul, Minn.; Dr. T. B. Tuttle, Helena, Mont.; Dr. Henry Mitchell, Asbury Park, N. J.; Dr. Richard H. Lewis, Raleigh, N. C.; Dr. H. H. Healey, Grand Forks, N. Dak.; Dr. Benjamin Lee, Philadelphia, Pa.; Dr. Gardner T. Swarts, Providence, R. I.; Dr. George R. Tabor, Austin, Tex.; Dr. F. S. Bascom, Salt Lake City, Utah; Dr. C. S. Caverley, Rutland, Vt.

The Surgeon-General, in calling the conference to order, stated that nothing had transpired during the past year to render any special conference necessary and that the meeting was simply in compliance with the provisions of the law of 1902, providing that such a conference be held at least once in each year.

The operations upon the Texas-Mexican border were reviewed, and a statement was made to the conference of what had been accomplished by the united efforts of the Service, the State health officer of Texas, and the Mexican authorities in controlling the epidemic and controlling its recrudescence.

The delegates were then called upon in alphabetical order and gave brief addresses upon the operations of their respective boards during the past year.

The following committees were announced:

Scientific research and sanitation.—Dr. William H. Welch, Dr. William C. Woodward, and Dr. U. O. B. Wingate.

Prevention and spread of epidemic diseases.—Dr. N. K. Foster, Dr. Edmond Souchon, and Dr. J. N. Hurty.

Morbidity and mortality statistics.—Dr. Henry B. Baker, Dr. Gardner T. Swarts, and Dr. H. M. Bracken.

State legislation.—Dr. Benjamin Lee, Dr. C. O. Probst, and Dr. Irving A. Watson.

Education.—Dr. C. A. Lindsley, Dr. Paulus A. Irving, and Dr. J. A. Albright.

Cholera.—Dr. Samuel W. Abbott, Dr. Daniel Lewis, and Dr. Andrew C. Smith.

Yellow fever.—Dr. Joseph Y. Porter, Dr. J. F. Hunter, Dr. George R. Tabor, Dr. William H. Saunders, and Dr. T. Grange Simons.

Plague.—Dr. F. F. Westbrook, Dr. J. S. Fulton, and Dr. Andrew C. Smith.

Smallpox.—Dr. Henry Mitchell, Dr. G. E. Young, Dr. S. N. Meyers, Dr. T. B. Beatty, and Dr. J. N. McCormack.

Tuberculosis.—Dr. C. E. Cooper, of Colorado, and Dr. W. G. Hope.

Leprosy.—Dr. J. C. Nolte, Dr. Charles B. Cooper, of Hawaii, and Dr. J. F. Smith, of Porto Rico.

Typhoid fever.—Dr. William C. Woodward, Dr. J. A. Egan, Dr. S. W. Abbott, Dr. J. N. Hurty, and Dr. J. S. Fulton.

CONFIDENCE AS TO PLAGUE MEASURES IN SAN FRANCISCO.

The conference also passed the following resolution with regard to the plague situation in California:

Resolved, That this conference expresses its confidence in the present methods in force in California in dealing with plague, and that it extends its congratulations to the national, State, and municipal sanitary authorities for their harmonious action in the control of this disease.

The transactions of the conference will be published in full at an early date.

AID TO THE MANAGEMENT OF THE LOUISIANA PURCHASE EXPOSITION.

Upon the request of the medical director of the exposition, approved by the president of the same, Surg. James M. Gassaway, of the Service, was detailed as sanitary officer of the exposition grounds and buildings, and has entered upon the discharge of his duties.

As has been the custom at previous World's Fairs, an exhibit calculated to illustrate the various functions and operations of the Service was made, and has been installed at the Louisiana Purchase Exposition. The exhibit embraces models of quarantine camps and maritime quarantine stations, disinfecting apparatus, exhibits of ward furniture and hospital appliances, one of the traveling laboratories of the Service, exhibits of cultures, pathogenic and nonpathogenic specimens of mosquitoes, photomicrographs of mosquitoes, and various pathogenic organisms, models showing the contamination of water supplies and drawings showing methods of water purification, electrical apparatus, and a full outfit for X-ray work.

The exhibit has attracted much comment of a favorable nature.

MEETING OF THE NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS.

As a consequence of the organization of this society, the first meeting was held at Atlantic City, N. J., just prior to the meeting of the American Medical Association at the same place, and was called to order on the evening of June 6, 1904. The Service was represented by Passed Asst. Surg. M. J. Rosenau, whose report follows in another part of this publication.

Dr. E. L. Trudeau, of Saranac Lake, N. Y., was chosen president, and the following directors were likewise chosen: Massachusetts, Bowditch and Otis; Connecticut, Foster; New York, Biggs, Trudeau, Devine, and Knopf; Pennsylvania, Flick, Ravenel, Anders, and Pearson; New Jersey, Hoffman; Maryland, William H. Welch, Osler, Jacobs, and Fulton; District of Columbia, Sternberg; North Carolina, Minor; Colorado, Soley; Illinois, Klebs and Babcock; Minnesota, Bracken; Missouri, Porter; Indiana, Hurty; Michigan, Vaughan; Ohio, Probst; California, Briggs; Texas, M. M. Smith; Public Health and Marine-Hospital Service, Surgeon-General Wyman, and the United States Army, Major and Surgeon Bushnell.

PORTO RICO ANÆMIA COMMISSION.

APPOINTMENT OF ASST. SURG. W. W. KING, AND PRELIMINARY REPORTS
ON PROGRESS OF THE INVESTIGATIONS.

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, April 5, 1904.

SIR: Replying to your communication of January 26, 1904, relative to your desire to engage with Assistant Surgeon Ashford, U. S. Army, in an endeavor to eradicate certain forms of anemia caused by uncinariasis in the island of Porto Rico, and to the Bureau reply to the same, under date of February 6, 1904, and to a subsequent communication from you inclosing a request from His Excellency Governor Hunt, of Porto Rico, that you be detailed for the continuance of the investigation above named, you are informed that, in addition to the duties at present devolving upon you, the Bureau desires that you undertake the investigation and the operations requested by Governor Hunt.

With this end in view, you are directed to report to Governor Hunt, and in connection with Doctor Ashford to pursue such plans as may be agreed upon by you for the investigation and eradication of uncinariasis in the island.

In the future, should you find it impossible to continue the Service work and these investigations, you are directed to inform the Bureau, and an assistant will be detailed to report to you.

You are requested to report from time to time, about once in each month, the progress of the investigations. It is not the intention of the Bureau to publish these reports until such time as your work may be completed and the wishes of Governor Hunt in regard to publication are ascertained.

You are further directed, during the prosecution of your investigations, to make report upon any other parasites which you may come across, especially those of an intestinal nature affecting human beings. Any specimens of this nature which you may desire to have investigated may be forwarded to the Bureau, and they will be referred to the Hygienic Laboratory for identification and classification if so desired by you.

Respectfully,

WALTER WYMAN,
Surgeon-General.

Asst. Surg. W. W. KING, *San Juan, P. R.*

PORTO RICO ANÆMIA COMMISSION,
Utuaado, P. R., May 16, 1904.

SIR: In accordance with instructions contained in Bureau letter of April 5, 1904, authorizing me to undertake some investigations of uncinariasis in Porto Rico, in company with Capt. and Asst. Surg. B. K. Ashford, U. S. Army, I have the honor to make the following report of the work up to May 1, 1904:

We are engaged in this work under the name of the "Anæmia Commission," having associated with us Dr. Pedro Gutierrez, of Bayamon, P. R., as member of the commission and its disbursing officer.

Work was begun on March 1, when Doctor Ashford reported to the governor.

Under authority from the United States War Department practically all the camp equipment was loaned to the commission by the military authorities in San Juan.

The location selected for the first camp was at Bayamon, P. R., near the local city hospital. The laboratory work was done in several rooms of this city hospital, for the use of which we are indebted to the city authorities.

The camp consisted of 10 tents, as follows: Eight tents of 6 beds each, 1 dining-room tent, and 1 administration tent. The camp was ready to receive patients on March 14.

The worst patients were admitted only for three or four days while thymol was being administered. Some few had to be kept for a short time longer. Most patients were given their medicine to take at their homes.

During March and April 937 cases of anæmia were examined and treated. In each case the diagnosis was corroborated by microscopical examination of the feces. In all but 7 cases was the ova of the *Uncinaria americana* found. In these exceptions other adequate causes of their anæmia were found.

They were given medicine and instructed to return at the end of each week's treatment for a reexamination and more medicine. Although we were told that this class of people were so irresponsible that they would not return, yet over two-thirds did return with more or less regularity. In about 640 cases a record of the original and successive hemoglobin readings was made to precisely determine their progress toward cure. Up to April 30 about one-third of the cases which were reexamined one or more times had been discharged cured. The vast majority of the remaining two-thirds had so greatly improved that it is but a question of time until their cure will be complete. The number of applicants finally became so great that it was a physical impossibility to take hemoglobin readings from all. Not wishing to turn away any genuine case without treatment, we adopted the plan of treating them without blood examination.

In so far as we have been able to learn, there has been no death among the patients of the commission. One patient died in the hospital before treatment could be instituted; hence is not included among our patients.

When the commission began its work there was openly expressed skepticism among both physicians and laity. This, however, has been entirely broken down in the locality in which we have been working and among all who have seen the remarkable difference between the use of iron and quinine and thymol.

The work is attracting great attention, and its immense importance is beginning to be realized.

This report is somewhat delayed, owing to the fact that it was due about the time the camp hospital was transferred from Bayamon to Utuado, where we are now established.

Respectfully,

W. W. KING,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

PORTO RICO ANÆMIA COMMISSION,
Utua^{do}, P. R., June 13, 1904.

SIR: I have the honor to make the following report of the work of the anæmia commission during the month of May, 1904.

The operations of the commission at Bayamon were practically closed April 30, and during the first week in May camp was broken and the material transported by rail to Arecibo. Thence by ox cart to Utua^{do}, where it is now established. The tents are the same as at Bayamon, except that the administration tent has been converted into a bed tent. Fifty-four patients can be accommodated, and the applicants far exceed the bed room.

The tents are pitched on high rolling ground, across a small stream from the town. Some 200 yards from the tents is a large house which is occupied by the commission for laboratories, workrooms, treatment of out-patients, kitchen, etc.

Treatment of patients was begun in Utua^{do} on May 9, since which time 677 patients have been examined and treated. The patients are divided into three classes, which for convenience we have designated (1) "study cases," (2) "clinical cases," (3) "miscellaneous cases." The first class, 30 in number, are those in which special study of the blood is made by weekly examinations. They are selected typical cases of the disease. The records of these cases when completed will be very valuable and interesting.

The second class (clinical cases), 630 in number, comprises the great mass of the patients. They present every grade of anæmia, from the moribund to those infected with uncinaria, but yet presenting scarcely any symptoms and no anæmia.

The diagnosis in each case is made by microscopic examination of feces. An identification card is issued to each patient and thymol prescribed. They return usually each week, when their excrement is re-examined and further treatment given. The examination of new arrivals and re-examination of old cases involves an immense amount of labor and time, so that generally but one slide of each patient is examined. Realizing that if the ora are very few they may not be found in a single slide, hence thymol is repeated after the first examination showing no ora. After three such examinations it is considered that all uncinaria have been expelled, and the treatment is reconstructive. In markedly anæmic patients reconstructive treatment is begun from the first. The third class (miscellaneous) are a few cases of patients with parasites other than the uncinaria and having no anæmia and other cases for comparison with uncinariasis.

At the beginning of the work at Utua^{do}, at our request the alcalde (mayor) directed his representatives in the 24 districts of the municipality to send in the worst cases of anæmia in his district. As a result we have received many extreme cases, carried in hammocks from their homes up in the mountains. One died before arrival and two did not live long enough to be treated after arrival. It will be seen that our first cases have been profoundly anæmic and their recovery slow; hence it will be understood that while all but a few have improved there have been scarcely any completely cured as yet.

Besides infection with uncinaria, we find very frequently infection with ascaris lumbricoides, oxyuris vermicularis, trichocephalus dispar,

and strongylus intestinalis. Also one case each of distomum hepaticum and bilharzia hematobia.

The appropriation of \$5,000 has been about half expended, and basing our calculations on past expenditures, we expect to be able to continue about three months longer.

Respectfully,

W. W. KING,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

PORTO RICO ANÆMIA COMMISSION,
Utua do, P. R., July 25, 1904.

SIR: I have the honor to report upon the progress of the work being done by the anæmia commission for the month of June, 1904.

There has been no radical change in our mode of procedure from that outlined in my last report.

The results of our first cases here have attracted so large a number of persons that it is with difficulty that the commission copes with the increased clinic. From 200 to 250 patients daily receive attention, and of this number about two-thirds are old cases returning for further treatment. The number of patients treated at Utua do has reached a total of 2,185.

During the month five deaths occurred among our patients. Three were from uncinariasis alone; all extreme cases. The other two were old men, one of which died of diarrhea complicating uncinariasis; the other had little anæmia, death being due to old age.

It is impossible to state definitely the number of cases cured to date, because a large number have not yet returned for their final examination and discharge. To one in constant contact with these patients the betterment observed in nearly all of them is astonishing. Men who at the beginning of treatment could scarcely walk are now at work. Practically they are cured, but technically their blood lacks a few per cent of the arbitrary standard of hæmoglobin percentage to which we endeavor to raise it, 85 per cent or more.

Thus many patients, feeling themselves cured, do not think it necessary to make a long journey to tell us that fact, not appreciating the statistical importance of a final examination of the blood. Hence our difficulty in this report of incomplete work to state exact number of cured patients.

As all cases admitted to the hospital are severe ones, and as, with scarcely an exception, they are rapidly improving, it is but reasonable to believe that the out-patients, as a rule lighter cases, are being cured at an equal rate at least.

On June 11 the first patient was discharged, having above the required 85 per cent of hæmoglobin. Since that date 103 cases have been discharged in this manner. A great many others will be discharged within the next few weeks, as the bulk of them have not yet been under treatment sufficient time.

In those cases in which a special study of the blood is made the patients are not discharged until the hæmoglobin reaches 100 per cent.

However, some patients can not be held under observation long enough, as they feel perfectly well, and wish to go home before the hæmoglobin reaches that mark. The first cases of this kind were

picked from among the sickest patients, in whom the progress of cure is slower. However, I anticipate that with my next report I will be able to inclose a copy of the clinical history and blood charts of a typical cured severe case. Some very interesting observations have been made on the avenue of infection, symptoms, course, and treatment of uncinariasis. While we have not yet completed any experimental proof, yet clinical observations strongly suggest that infection is through the skin. Practically all cases have had an eruption closely resembling if not identical with the ground itch observed by various writers on this disease. We hope to be able to prove or disprove the theory. The time of the commission is so taken up with the daily clinic hospital cases and blood counts that we have not had an opportunity to tabulate or reflect upon the immense mass of records and material that we possess.

Respectfully,

W. W. KING,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

INTERNATIONAL SANITARY CONFERENCE OF PARIS, 1903.

This conference was invited by the Government of the French Republic at the instance of the Government of the Kingdom of Italy, and had for its object the condensing into one text the provisions of existing conventions, with such modifications as the progress of epidemiology, the interests of the commerce of the world, and the requirements of the public health might demand. The conference was originally called for the first half of June, 1903, but the time being considered too short by some of the signatory powers a postponement was asked for, and the conference was finally called for October 10, 1903. Delegates from the United States having been asked for, Asst. Surg. Gen. H. D. Gessidings was detailed on behalf of the Public Health and Marine-Hospital Service; Col. William C. Gorgas was detailed on behalf of the United States Army, and Medical Inspector Frank Anderson on behalf of the United States Navy. These delegates were duly accredited by the Department of State, but not being furnished with any plenary powers the extent of their functions was to attend the conference, take part in the discussions of the conference and its various commissions, and to finally sign the convention adopted as referendum.

The conference was attended by delegates both technical and diplomatic, from all the powers of Europe, from Egypt, Persia, the United States and British India.

The delegates from the United States were hospitably received, and treated with most distinguished consideration, being given places on all of the three great commissions to which the conference was referred, and in addition Doctor Gessidings was appointed as one of the subcommittee of 13 technicians.

The discussions of the conference and the commissions were animated and full of interest, and many important changes were made in the previous regulations, in regard to plague and cholera. A resolution was passed to limit as far as possible restrictions upon commerce so that the least possible restrictions were placed upon merchandise, and restrictions upon persons were in some instances entirely removed

and in others modified; but the underlying principle seemed to be accepted that the persons actually stricken with plague and cholera were not dangerous per se, but were to be guarded against as probably or possibly infecting their surroundings and belongings. Yellow fever was touched upon, and enthusiastic support was given to the American doctrine and discovery of its mosquito conveyance, and the conference in regard to this disease limited itself to a recommendation to countries exposed to the disease to modify their requirements to conform to the modern discoveries on the subject.

On December 3, 1903, the texts of preceding conventions having been edited and consolidated, the convention as prepared was submitted for signature.

Delegates on behalf of Great Britain and Germany made numerous reservations, Great Britain in particular declining to adhere to the generally expressed view that the rat was the principal agent in the dissemination of plague, and in support of this view striking facts were presented by Dr. Theodore Thomson, of the British local government board.

Upon the return of Doctor Geddings to the United States the convention and many of the communications to the conference were translated in the Bureau and submitted in a report to the Surgeon-General, by whom they were referred to the Bureau sanitary board for review and report. The board excepted to a few paragraphs as being contrary to the letter and spirit of the quarantine laws and regulations of the United States, and this report was duly transmitted to the Secretary of the Treasury. In the meantime correspondence was received from the Department of State, representing that the Government of the French Republic attached particular importance to the adherence of the United States to the convention, and that the Secretary of State desired to submit the convention to the Senate of the United States for ratification by that body. The Secretary of the Treasury therefore transmitted the report of the Surgeon-General with a letter to the Department of State, and the convention, with the exceptions noted, was transmitted to the Senate, but owing to the approach of the adjournment of Congress, the convention failed of ratification at that session. In the meantime correspondence has passed between the French embassy in Washington and the Department of State, requesting that the United States recede from certain of its reservations, and at the close of the fiscal year the question of these recessions is still under consideration. It is believed to be quite possible, however, to meet the views of the French Government without sacrificing any public health considerations, and it is hoped that the convention will receive the approval of the Senate at its next session.

It is gratifying to be able to report that the convention as adopted by the conference presents few departures of moment from the law, the regulations, and the quarantine practices of the United States.

The convention, with its accompanying reports and documents, will be published at a future time as a separate publication.

INSPECTION OF MANUFACTURE OF VACCINE, SERUMS, ETC.

As provided in the act above named, regulations under the act were prepared and promulgated on February 21, 1903, becoming effective, therefore, August 21 of the same year.

The inspections provided for by section 3 of the act were made by the director and assistant director of the hygienic laboratory of the Service, and their reports, having been canvassed by the sanitary board of the Service, were referred to the Surgeon-General, by whom recommendations relative to the issuance of licenses were made to the Secretary of the Treasury.

The following establishments have been inspected and licensed—11 in the United States, and 2 abroad:

No. of license.	Firm or person.	Products.
1	Parke, Davis & Co., Detroit, Mich.	Vaccine virus, serums, and toxina.
2	H. K. Mulford Co., Philadelphia, Pa.	Do.
3	Dr. H. M. Alexander & Co., Marietta, Pa.	Vaccine virus and diphtheria antitoxin.
4	The Pennsylvania Vaccine Co., Conewago, Pa.	Vaccine virus.
5	The Fluid Vaccine Co., Milwaukee, Wis.	Do.
6	The Pocono Laboratories, Swiftwater, Pa.	Do.
7	The National Vaccine Establishment, Washington, D. C.	Do.
8	The Cutter Analytic Laboratory, San Francisco, Cal.	Diphtheria antitoxin and vaccine virus.
9	Frederick Stearns & Co., Detroit, Mich.	Diphtheria antitoxin and antistreptococcus serum.
10	do.	Vaccine virus.
11	The Pasteur Institute, Paris, France	Viruses (other than vaccinia), serums, toxina, and analogous products.
12	The Chemische Fabrik auf Actien (vorm E. Schering), Berlin, Germany.	Diphtheria antitoxin and antistreptococcus serum.
13	The National Vaccine and Antitoxin Establishment, Washington, D. C.	Diphtheria antitoxin.

Samples of the products of these firms are purchased from time to time in open market and examined in the hygienic laboratory for purity and potency.

No examination as yet made has revealed the presence of any contaminating organism or foreign toxin in any diphtheria antitoxin offered for sale, and there has been a marked and gratifying improvement in the quality of the vaccine virus sold in open market as evidenced by the decrease in the number of organisms of all kinds found and the diminution, and in many cases total absence, of all pathogenic and pyogenic cocci.

The procedure of inspection is as follows: A medical officer of the Service, above the grade of assistant surgeon, is detailed by the Secretary of the Treasury, upon the recommendation of the Surgeon-General, as inspector. This inspector visits the establishment to be reported upon, unannounced, but is required before beginning the actual inspection, to visit the office of the individual or firm and state the object of his visit. He is provided with blank forms upon which are stated in the shape of questions and answers all points which it is desired to observe. There is also abundant space left under the head of "remarks" for any additional points which it is desired to emphasize.

The inspector makes his report on these forms to the Surgeon-General, and upon their receipt in the Bureau they are referred to the Bureau sanitary board, by whom they are reviewed, and a report with recommendations thereon is then made to the Surgeon-General. The report is reviewed by the Surgeon-General, and if a license is recommended by the board, such a recommendation is made by him to the Secretary of the Treasury, by whom a license is then issued.

which holds good for one year, unless revoked for cause, such as faulty methods of preparation, faulty construction or administration of establishment, or impurities or lack of potency of products as established by laboratory examination.

Upon the discovery of such faults or conditions the Surgeon-General may make recommendations to the Secretary that the license of the offending establishment be suspended if not corrected within thirty days, or revoked if not corrected within sixty days. Should a license be suspended or revoked the fact is to be announced in circular signed by the Secretary of the Treasury.

HYGIENIC LABORATORY.

Report of Passed Asst. Surg. M. J. ROSENAU, *Director*.

SIR: In accordance with the regulations I have the honor to submit the following condensed summary of the activities of the Hygienic Laboratory for the fiscal year ended June 30, 1904.

The scientific work was seriously interrupted last winter during the moving of the laboratory from its old quarters in the Butler Building.

The reorganization of the laboratory in accordance with recent laws has greatly increased its work and broadened its scope. Many important problems, especially those affecting the public health, are made the subject of investigation, so that there is scarcely a branch of the sanitary sciences that has not engaged our attention during the year.

NEW BUILDING.

The laboratory had long outgrown its quarters on the top floor of the Butler Building, so that the new structure provided for by Congress was absolutely necessary to accommodate the divisions of zoology, pharmacology, and chemistry, as well as the division of pathology and bacteriology.

The building was constructed under the direction of the Supervising Architect at a cost of \$35,000 and was equipped and furnished by the Service at a further cost of about \$13,000. The keys were turned over to us July 2, 1903, and the task of equipping the building and preparing it for our work was then diligently carried out.

IMPROVEMENTS NEEDED.

GROUND.

The grounds about the laboratory are in a very untidy condition, need grading and terracing, and should be arranged by a landscape gardener, so that the planting of trees and shrubbery may be done to attain an artistic end result. There is at present no separate entrance to our reservation, and the necessity for one need not be emphasized. The cost of these improvements is estimated at \$10,000.

NEW BUILDINGS.

It must not be forgotten that the present building was designed to accommodate only the division of pathology and bacteriology. Since

the money was appropriated for this building three other divisions have been added, and the laboratory has also greatly increased its scope of usefulness, so that the present quarters are cramped and insufficient. I therefore have the honor to recommend that the Congress be asked for an appropriation of \$150,000 to construct increased facilities for the laboratory work, including a disinfecting shed, animal house, and power plant.

LABORATORY COURSE FOR STUDENT OFFICERS.

The course for student officers of the Service has developed into a complete course of instruction in the sanitary sciences. Beginning with a review of histology, pathology, and bacteriology as fundamental branches, the course takes up the more practical subjects of the infectious diseases, their causes and methods of control, quarantine, principles and practice of disinfection, and sanitary problems connected with pure water, ventilation, and impurities in the air, vital statistics, sanitary laws and regulations, and similar problems affecting the public health.

During the fiscal year just ended eight student officers were assigned to the laboratory for instruction, viz:

Asst. Surg. Clarence W. Wille. In the laboratory at the beginning of the fiscal year; detailed to Baltimore, Md., August 4, 1903.

Asst. Surg. Thomas B. McClintic. In the laboratory at the beginning of the fiscal year; continued the course until April 4, 1904, when he was detailed to Tampico, Mexico.

Surg. J. C. Perry. Began the laboratory course August 17, 1903; detached January 30, 1904, for duty in Panama.

Surg. Duncan A. Carmichael. Began the course August 27, 1903; detached September 28, 1903.

Asst. Surg. Halstead A. Stansfield. Began the course November 17, 1903; under instruction at the close of the fiscal year.

Asst. Surg. Joseph Goldberger. Began the laboratory course December 17, 1903; detailed to Tampico, Mexico, March 23, 1904.

Asst. Surg. Edward Francis. Resumed the course, part of which had been taken the year before; still under instruction at the close of the fiscal year.

Passed Asst. Surg. R. H. von Ezdorf. Began the course December 23, 1903; still under instruction June 30, 1904.

With each succeeding year the course of instruction to student officers is improved and enlarged, useless material is expunged, and each subject made as practical as possible, so as to be of use to the officer in his official duties in connection with his quarantine, hospital, and epidemic work.

One evening each week the workers of the laboratory meet at the home of the director for a review of the current literature and discussion of the work in progress.

LABORATORY BULLETINS.

During the fiscal year the following laboratory bulletins were issued:

Bulletin No. 14. Spotted Fever (Tick Fever) of the Rocky Mountains. A new disease. By John F. Anderson.

This bulletin by Passed Asst. Surg. John F. Anderson, the assistant director of the laboratory, materially advanced the difficult subject of the cause and methods of transmission of this strange disease.

Doctor Anderson confirms the parasite found in the blood and discovered by Doctors Wilson and Chowning.

Bulletin No. 15. Inefficiency of Ferrous Sulphate as an Antiseptic and Germicide. By Allan J. McLaughlin.

In this bulletin Doctor McLaughlin has made a careful study of green vitriol, or "copperas," as it is commonly called, showing by laboratory tests that it has exceedingly feeble germicidal properties and can not be depended upon in practical work.

Bulletin No. 16. The Antiseptic and Germicidal Properties of Glycerin. By M. J. Rosenau.

This bulletin deals largely with the vaccine problem, especially the preparation of glycerinated vaccine virus. The work conclusively shows that glycerin should be classed more as a bland preservative than as an antiseptic or germicide. In this bulletin attention is called to the overconfidence in the germicidal properties of glycerin formerly held by some manufacturers of vaccine virus. The correction of this one error in making the virus has in itself resulted in a decided lessening of the impurities of vaccine virus found on the market.

Bulletin No. 8. Laboratory Course in Pathology and Bacteriology. (Revised edition.) By M. J. Rosenau.

This bulletin contains a syllabus of the course in pathology and bacteriology given student officers in the Service.

There are a number of bulletins in preparation for the coming fiscal year.

STANDARD UNIT FOR DIPHTHERIA ANTITOXIN.

The regulations prepared in accordance with the law approved July 1, 1902, provided that the director of the Hygienic Laboratory shall examine antitoxins for purity and potency. The examination of an antitoxic serum for purity is comparatively simple and regularly carried out in the laboratory as part of the routine. Examinations are made of the products of each establishment requesting a license. After the license is issued the products are examined each month to see that the standard of excellence is maintained.

So far no tests have been made of the exact potency of these products, the delay having been caused by the fact that there is no standard unit recognized by the United States. The director of the laboratory has, therefore, taken steps to duplicate the unit for measuring the strength of diphtheria antitoxin established and made by Professor Ehrlich, and as soon as this unit is issued it will become the Government standard, and all manufacturers making this serum will be required to standardize their product in accordance with the official unit.

Much time of the director during the past few months was taken up with the preparation of this standard unit for diphtheria antitoxin. Large quantities of diphtheria toxin were made and standardized in order to determine what is known as the "L+ dose," and samples of Ehrlich's unit were obtained from his laboratory in Frankfort-on-the-Main, Germany. A large quantity of dried horse serum was obtained by Doctor Anderson from Parke, Davis & Co., of Detroit, Mich., which is now being standardized and compared with that of Ehrlich.

This work is now well under way, and it is hoped by next winter to have a thoroughly established unit of unvarying strength ready for distribution.

The director of the laboratory was a member of a subcommittee appointed by Prof. Joseph Remington to determine the desirability of admitting diphtheria antitoxin into the Pharmacopœia. This committee made the following report:

DEAR SIR: The special committee appointed by you to consider the proposition to introduce diphtheria antitoxin into the next issue of the United States Pharmacopœia begs to make the following recommendations:

1. That diphtheria antitoxin be introduced into the United States Pharmacopœia.

2. That descriptions of the following physical characteristics be included:

(a) Microscopic appearance of fluid antitoxic horse serum.

(1) Fresh normal antitoxic horse serum to which no antiseptic has been added.

(2) Same when kept under proper conditions (see below) for from six months to one year.

(3) Fresh antitoxic horse serum to which an antiseptic has been added.

(4) Same when kept for period of six months to one year.

(b) Specific gravity: The specific gravity of normal antitoxic horse serum taken at 25° C. should be within the following limits, 1.025-1.040.

(c) The odor of normal antitoxic horse serum is practically imperceptible. When an antiseptic has been used in its preparation the odor of the antiseptic may be present.

3. That each vial of diphtheria antitoxin should have upon the label attached to the bottle or inclosed in the sealed package containing the bottle the following data:

(a) The name and percentage by volume of any antiseptic used in the preparation of the antitoxin.

(b) The date on which the antitoxin was tested.

4. That a statement be introduced to the effect that diphtheria antitoxin should be kept at a temperature ranging from 40° to 60° F., in a dark place, and that when properly sealed and kept under these conditions it decreases in antitoxin units very gradually. The decrease in one year has been found to vary between 10 and 30 per cent.

5. That the average initial dose for the treatment of cases of diphtheria be 3,000 units; for the immunization of well persons, 500 units.

6. That the strength of diphtheria antitoxin be expressed in terms of the unit established by Ehrlich.

Yours, very respectfully,

THEOBOLD SMITH, *Chairman.*

THOMAS C. CRAIG.

H. A. HARE.

E. M. HOUGHTON.

J. J. KINYOUN.

M. J. ROSENAU.

H. D. PEASE, *Secretary.*

Prof. JOSEPH REMINGTON,

Chairman Committee of Revision of the

Pharmacopœia of the United States.

Philadelphia, Pa.

EXAMINATION OF VACCINES.

Vaccine virus made by each licensed manufacturer is purchased on the open market and examined in the laboratory for impurities by Dr. John F. Anderson, assistant director. This work is done under my direction, as prescribed by the regulations made in accordance with the law approved July 1, 1902.

Each month a number of vaccine points or tubes, as the case may be, made by each licensed manufacturer, are examined bacteriologically. Since the operation of the law a great improvement in the

impurities found in vaccine virus has been noted. Whereas we used to find thousands of contaminating organisms, some of them pathogenic, we now rarely find more than a hundred or two, and seldom virulent bacteria. We feel sure that the law has effected this very beneficial result; but in the efforts to produce a pure vaccine it is feared that the manufacturers have in some instances not only killed contaminating organisms, but also the vaccine virus itself.

It is therefore evident that it is equally as important to examine the vaccine virus for potency as for purity. With your permission, arrangements are now being made with the various children's asylums in the District by which cases may be had for observing the potency of the vaccines, in order to carry out this part of the work. As soon as these arrangements are completed and the vaccine virus is examined each month for both purity and potency, we feel that the laboratory part of the work will be as complete as the present state of our knowledge allows.

In several instances faults were found in the vaccine, and the Bureau's attention to this was called and the manufacturer notified, and the faults were promptly corrected.

The knowledge which manufacturers have of this constant supervision of their product has a beneficial effect.

The present method of examining vaccine virus is as follows:

Dry points.—The point is immersed in 1 c. c. of physiological salt solution for fifteen minutes to soften the vaccine matter. It is then scraped off with a sterilized platinum scraper and thoroughly agitated by blowing in and out of a sterilized pipette. This emulsion is then put in three Petri dishes, as follows: 5 drops in the first, 10 drops in the second, and the remainder in the third. Then melted agar is poured over them and they are incubated at 37° C. for three days, then at room temperature for two days. The number of colonies is then counted. When the number is small per plate, the entire number is counted. In the case of vaccine in the capillary tubes, the contents of the tubes are planted in 1 c. c. physiological salt solution, and then thoroughly agitated to break up the clumps, as in the case of the point. After the plates have been incubated the various colonies are examined, and in this way we determine the various kinds of contaminating organisms. The pus cocci appear to predominate in all vaccine, though many contain "spreader," which often causes trouble in counting the plates. Molds are frequent; yeasts are sometimes found; the hay bacillus is very frequently present; and streptothrices have been found in a great many vaccines. Further work with these latter is now being done in the laboratory.

Tubes.—The entire contents of 10 tubes and the tubes themselves are planted in 200 c. c. of freshly prepared and recently boiled glucose bouillon. Ten points are also planted in 200 c. c. of the same media, then incubated at 37° C. At the end of forty-eight hours 1 c. c. of the top growth per 1,000 gm. of rabbit is inoculated into the peritoneal cavity of a rabbit. If the rabbit dies or shows signs of illness from the injection, a careful examination is made of the body to determine, if possible, the organism causing the symptoms. At the end of seven days the bouillon growth is filtered through porcelain and 0.2 c. c. of the filtrate is subcutaneously injected into a white mouse. This latter inoculation is especially to determine the presence of tetanus toxin, it having been determined by work in the laboratory that this inoculation of the filtered toxin was a very sure and efficient way to determine the presence of small numbers of tetanus bacilli.

CAR SANITATION.

For many years car sanitation has been a subject for scientific study in this laboratory on account of its great interest to the public health.

The director of the laboratory, in addresses which he has delivered before one or two meetings which he was delegated to attend as a representative of the Service, has endeavored to impress upon railroad

companies the desirability of improving the sanitary conditions of their passenger coaches.

He has advocated plain, smooth, hard surfaces that may readily be cleaned, and shown the dangers of the tapestries, plush, and other unsanitary luxuries with which cars are sometimes burdened. He has called attention to the open hopper of the water-closet, especially in spreading typhoid fever throughout the country, and has indicated the insanitary arrangement of the washbowls, as well as the need for a separate sink for teeth-cleaning and throat-gargling processes.

One of the dangers that has agitated the public mind is the menace in occupying cars with cases of tuberculosis or traveling in sleepers that have been occupied by such cases. The question as to how much danger there really is of contracting tuberculosis from dried sputum has been raised by some railroads. Although considerable work has been done on this line by several workers, it was decided to investigate the problem in this laboratory, and the following experiments were planned:

A number of specimens of tuberculous sputum were obtained, examined in stained preparations for tubercle bacilli, and then inoculated into guinea pigs in the usual manner. This same sputum was then placed upon carpet, plush, and other surfaces and allowed to dry at the ordinary temperature. From month to month some of this dried material was inoculated into guinea pigs. It is too early to speak of the results. The work is one which will be continued over several months and promises useful and definite knowledge on the subject.

PATHOLOGIC SPECIMENS EXAMINED.

During the year a number of pathologic and bacteriologic specimens were received in the laboratory for diagnosis. Many of these were received from the various hospitals and quarantine stations of the Service. Apart from their scientific interest, they were of much service in the instruction of student-officers.

The samples of water which were received were examined in most instances both chemically and bacteriologically. When the bacteriological examination of the water was made, it was complete; the number of organisms per cubic centimeter being accurately determined, and in each instance a search was made for the colon bacillus and the number of them determined. It is of interest, in this connection, to state that in one instance the *Bacillus typhosus* was isolated in a sample of water which was received from a badly infected source.

The numbers of various specimens are contained in the following table:

Appendixes	1	Alveolar sarcoma	1
Blood for Widal test	76	Scrotal fluid	1
Carcinoma	4	Spindle celled sarcoma	2
Fibroma	5	Sputum	6
Papilloma	3	Testicle tuberculous	1
Peritoneal fluid	1	Tuberculous glands	1
Plague	1	Urine	62
Pus for tubercle	1	Urinary calculus	1
Pus for gonorrhea	4	Water	21
Prostate gland	1	Yellow fever	21
Round celled sarcoma	2		

Some of the officers of the Service frequently send specimens of tumors and other pathological processes to the laboratory to assist in making diagnosis and guiding treatment. It is probably not generally known that the laboratory is prepared to do this work. Each specimen received is examined and a report submitted, and a section appropriately stained sent to the officer sending the specimen.

Tumors and parts of organs may be sent in alcohol or formalin.

SUSPECTED CASES OF PLAGUE AT QUARANTINE.

Several specimens were received during the year from near-by quarantine stations of suspected cases of plague. These were examined in the division of pathology and bacteriology, but in no instance was the plague bacillus isolated.

EXAMINATION OF DRUGS AND CHEMICALS.

The following letter is self-explanatory:

TREASURY DEPARTMENT,
Washington, April 1, 1904.

SIR: You are hereby directed, in so far as the facilities at your disposal will permit, to make an examination as to purity and potency of such drugs, pharmaceutical preparations, etc., as may from time to time be forwarded to you for that purpose from the Bureau or the medical purveyor of the Service. Reports of the findings in such case should be forwarded to the purveyor through the Bureau.

Respectfully,

WALTER WYMAN,
Surgeon-General.

DIRECTOR HYGIENIC LABORATORY.

Arrangements were entered into with the medical purveyor, who sent us numerous samples of supplies on his annual contract. Many of these samples were found upon analysis to be satisfactory. Some were below the pharmacopœial standard, and a few showed fraudulent substitution and adulteration.

This work has just been begun and is destined to grow in time to large proportions and useful results.

EXHIBIT FOR THE ST. LOUIS EXPOSITION.

The laboratory exhibit for the St. Louis Exposition was prepared in the Hygienic Laboratory. This embraced a traveling laboratory which contains the full and complete apparatus for original investigation in bacteriology. Four hundred and eighty tubes, showing growths of the various organisms, were also prepared. These growths were made on the various kinds of media. After obtaining the maximum growth, they were formalinized, then sealed with paraffin, and were then ready for exhibition. A number of Petri dishes showing colonies of the various bacteria, and also a fine collection of Petri dishes showing the contaminating organisms of vaccine virus were prepared.

DISINFECTANTS AND GERMICIDES.

Many germicidal substances were examined to determine their theoretical power and practical value.

Asst. Surg. H. A. Stansfield did some general work upon the power of chlorine and its vapor.

Doctor Anderson has worked over a year upon formalin and will soon announce important results, which will probably change our estimate of the value of this solution for practical purposes.

Asst. Surg. T. B. McClintic worked upon chlorinated lime and zinc chlorid. The preliminary report and results accomplished are included in this report.

Passed Asst. Surg. R. H. von Ezdorf carried on work on the same lines with sulphate of copper.

Many samples of proprietary disinfectants and the coal-tar creosote class were examined in the laboratory for the Treasury Department, Revenue-Cutter Service, and the Immigration Service, and separate reports made thereon.

YELLOW FEVER.

The director of the laboratory spent the greater part of last summer and fall in Vera Cruz, Mexico, under the auspices of the Yellow Fever Institute, as chairman of working party No. 2. The work of this commission was largely confined to repeating the work of working party No. 1 in relation to the *Myzococcidium stegomyiae* in the mosquito. A brief report was submitted December 18, 1903, which was published in the Public Health Reports January 15, 1904.

A large amount of material collected in Vera Cruz was brought back to the laboratory for study.

The cause of yellow fever is still an unsolved problem, and I have the honor to recommend that another working party be sent out early in the spring of next year for further work on this infection, than which there is no more important one on account of the great fear of this disease, requiring stringent quarantine regulations which seriously interfere with commerce and with the economical development of a large part of South and Central America.

MALARIAL FEVERS.

Some work upon malarial fevers was done in the Hygienic Laboratory at Washington and attempts made to grow the various species of anopheles mosquitoes. Considerable work upon this subject was also undertaken at Vera Cruz by the director and Doctor Francis, the results of their observations being included in the report on experimental studies on yellow fever.

Although the malarial fevers are the cause of more deaths and invalidation than any other tropical malady, the disease is not feared, probably on account of the value of quinine as a remedy and on account of the large number of mild cases with which persons living in sub-tropical and temperate regions are familiar.

There are many points concerning the particular species of anophles in relation to the various forms of yellow fever and also in relation to various hæmatozoa found in man, in domestic and wild animals. A locality is considered healthful or unhealthful dependent upon the prevalence of malaria, and I believe from a public-health standpoint this subject should be given a large share of our consideration, particularly the methods of its transmission and extermination.

DENGUE FEVER.

From time to time epidemics of dengue fever are reported from tropical and subtropical portions of the United States and its insular possessions.

The cause of this disease is unknown and the methods of its transference only guesswork. I therefore have to respectfully recommend that a scientific commission be detailed to study the next outbreak that may be reported.

While dengue does not kill, it is a very painful disease and is a serious cause of invalidism, and so far as the diagnosis is concerned it is frequently confused with yellow fever; so that exact knowledge of the disease would very materially help our quarantine and public-health work.

HOOKWORM DISEASE.

It is a pleasure to recall the valuable work done by American scientists in the diagnosis and treatment of this infection, which is much more prevalent in the United States and its possessions than was suspected a few years ago. Research work on this topic has been conducted in the Division of Zoology during the past year.

The work of Ashford and King in Porto Rico is deserving of the highest praise, and I have to respectfully recommend that work along similar lines might well be carried out in Florida and adjoining States where the infection is, according to Stiles, very widespread.

TUBERCULOSIS.

Miscellaneous work was done with the tubercle bacillus of man in its relation to other acid-fast organisms, and particularly the relation between human and bovine tuberculosis engaged the attention of the laboratory during the fiscal year, although no definite results were achieved. On account of the great importance of this subject, however, this work will be continued.

A study of the health records of our tropical possessions shows that in most of them more people die of tuberculosis than of any other disease, indicating the importance of improving the sanitary condition of these places and teaching the inhabitants the methods of spread and the necessary means of avoiding infection.

TYPHOID BACILLUS FOUND IN DRINKING WATER.

Passed Asst. Surgs. J. C. Perry and John F. Anderson, the assistant director of the laboratory, were detailed by the Surgeon-General in November of last year to investigate an outbreak of typhoid fever in Lexington, Va., and as their report is of particular interest from a technical and practical standpoint it is inclosed herewith.

The typhoid bacillus has been rarely isolated from drinking water, particularly water that is suspected of causing an epidemic of the disease. Doctors Perry and Anderson isolated from the drinking water used by the inhabitants of Lexington an organism which gave every reaction, both biologically and bacteriologically, to the *Bacillus typhosus*.

WASHINGTON, November 14, 1903.

SIR: We have the honor to submit the following report on the typhoid fever in Lexington, Va., and the investigation made in compliance with Bureau orders of the 23d ultimo relative to the prevalence of this fever and the causative factors operative.

Upon arrival in Lexington we had a conference with Dr. A. D. Estell, health officer; Dr. H. D. Campbell, and other members of the board of health, and all the data relative to the history and occurrence of the cases were given us for our guidance in an endeavor to ascertain the cause of the mild epidemic. Every assistance was given us in our work by the board of health and members of the faculty of the colleges in Lexington.

The history gleaned showed that more or less typhoid fever of a mild type has occurred in the town for several years and this year has been more prevalent, markedly so in October, until it assumed the nature of a mild epidemic. Most of the cases this season have been among the students of the colleges and the children attending the public school. This fact would seem to indicate that a far larger percentage of the resident population, especially adults, are immune, from previous mild attacks, or that special centers of infection are operative in causing the disease among the transient population and the unprotected younger members of the resident population. Probably both of these factors should be considered as operative.

Lexington has a population of 4,000, including the 600 students attending Washington and Lee University and the Virginia Military Institute. It is situated on a hill of moderate elevation, with a decided slope on either side from Main street, the center of the town. It is provided with a water supply obtained from 6 springs, the water being piped a distance of 2 and 3 miles through 4-inch and 6-inch mains to a reservoir about three-fourths of a mile from the town, from which the water is supplied to the houses in town.

The town also has a sewerage system in certain portions. Three sewers have been installed, and many of the better houses are provided with water-closets connected with the sewers. However, the latter provide for the disposal of fecal matter of only a small proportion of the population, and the usual primitive class of privies so common in small towns, villages, and rural districts is the almost universal method in practice, since even those houses that are equipped with water-closets are also provided with common privies for the use of the servants. These privies are located on the slope of the hill and the fecal matter is simply deposited on the ground, without even a pit or trench in most cases to receive it, to be washed away by the first rain that occurs. In many places these privies are situated near the hydrant from which the water is obtained, and if the water pipes about the hydrant are in any way defective it is difficult to see how the water can escape contamination. This method of disposing of fecal matter is crude and dangerous. There is no organized system for the removal and disposal of this fecal matter.

Another arrangement noted was the location of an open 6-inch sewer pipe immediately beneath the hydrant from which the water was secured. This opens in a small square compartment and is covered with a coarse wire screen. This receptacle is for the kitchen slops, but no doubt chambers are emptied and washed here and fecal matter is probably disposed of in apposition with the pipes from which the drinking water is secured. If this sewer pipe is not properly trapped or becomes leaky, the danger to the individual water supply is apparent. This location of cesspools is insanitary and a source of danger and should be condemned. The same arrangement could be effected in some other part of the yard removed from the vicinity of the water hydrant, and this danger would be remedied.

Inquiry relative to the occurrence of the fever showed that 69 cases had occurred since June 12, 1903, to October 23, 1903, and that of this number 43 had developed since September 30. The distribution of these later cases was as follows: Six on upper Jefferson street occurring in adjacent houses and practically in one short block, 6 cases on Washington street within a short distance of each other, 11 cases among the students of the public school on the same street quite near the cases just mentioned, and 9 cases among the students of the Virginia Military Institute. The remaining 11 cases were widely distributed throughout the city.

A study of the cases cited seemed to point to local centers of infection in the three districts mentioned, instead of a general infection of the water supply; and the theory that flies conveyed the infection and were the responsible fac-

tors did not appear tenable, because the rapid increase in the number of cases occurred when these insects were least numerous.

An analysis of the 6 cases in upper Jefferson street showed that 3 were students of the Washington and Lee University, 2 were children of the public school, and 1 a negro servant. The children may be eliminated from this center, as they may have contracted the infection while at the public school from using the water there. It was considered probable that the cases on Washington street contracted the disease from local centers of infection, infected water by contamination through leaky pipes or defective hydrants, and that the children of the public school were infected by the water supply at the school building.

The privies at the school building are only 20 feet distant from the hydrant from which the drinking water is obtained, and that in use by the boys is so situated that after a heavy rain the fecal matter is washed toward the hydrant, although drainage in another direction has been attempted. In these privies the fecal matter is simply deposited on the ground and they are of the most primitive type. That used by the boys is the most dangerous from the location and slope of the hill, and in this connection it may be pertinent to state that the greater number of cases among the school children occurred in boys.

The cause of 9 cases in the Virginia Military Institute was considered in connection with the possibility of a local center of infection, either through the water or milk supplied the institution; but the fact that these students had been at liberty in the town and had probably contracted the infection elsewhere was borne in mind.

Samples of water were taken from all these centers for bacteriological examination and the results obtained, with deductions, will be given further on in this report.

One spring in the city, known as "Back Spring," from which the city supply of ice is made, was considered especially suspicious on account of its location and the topography of its surroundings, and was made the subject of a preliminary report which should be considered in connection with this.

In this connection it may be stated that the Virginia Military Institute secures its supply of ice from a pond about three miles distant from the town; but as this had been used during the spring months, when the college was in session, and no cases of fever occurred at that time, it was eliminated as a source of danger.

The water supply of the town, as already mentioned, is derived from 6 springs. Three of these springs are known as the "Brushy Hill Springs," designated 1, 2, and 3. The watershed from which these springs derive their supply is a narrow valley three-fourths mile long by one-half mile wide at its lower part and three-fourths mile wide at the upper end. This valley is wooded throughout and no one lives on this watershed, except a family at the extreme upper end of the basin. A public road runs through one portion of this watershed, but as the amount of travel is not great and it is located higher up on the hills it is not considered dangerous to the water supply. The springs are closed in with stone, and concrete houses and the openings, or doors, are always kept locked. However, in spring No. 2 of this series it is apparent that after heavy rains surface water drains into the springs and measures should be taken to improve the wall around the spring in order to obviate this danger.

Below the commencement of this watershed, about 300 yards from spring No. 1, two cases of typhoid fever have occurred recently in one family. Inquiry relative to the source of this water supply revealed the fact that they secured it from a hydrant immediately adjacent to spring No. 1. Samples of water were taken from this hydrant, as well as from the 3 springs, for bacteriological examination.

The other 3 springs, known as "Connor Springs," are situated beyond the watershed just mentioned and are entirely separate from it. Spring No. 3 of this series has a watershed of its own, which is about three-fourths mile long by one-fourth mile wide in a deep valley. Connor Spring Nos. 2 and 3 have a watershed about three-fourths mile long by one-half mile wide. The latter is inclosed by a fence and about 50 cattle are pastured on the watershed. Spring No. 2 is not in excellent condition, as considerable surface water was found immediately adjacent, which no doubt drains into the spring.

The springs should furnish a pure water supply and the watersheds were found in good condition, free from habitations, and all that could be desired, with the possible exception of allowing cattle to graze on one of the basins. The water is piped from these springs into a reservoir situated about three-

fourths mile from the city. There are no people living anywhere near this place. The reservoir is inclosed with a high picket fence, the gates of which are kept constantly locked, so that in our opinion there was little if any danger of infecting the water at this site. Furthermore, it was not deemed probable that the springs themselves were infected, with the possible exception of Spring No. 1 of the Brushy Hill series, as the history of the cases pointed more to local centers of infection than to a general infection of the water supply. Samples of water, however, were taken from the reservoir and each spring, in order to make our investigations as thorough as possible.

BACTERIOLOGICAL EXAMINATION.

Nineteen samples of water were taken from various places and immediately placed upon ice and transported in this condition to Washington, where the examination was made in the Hygienic Laboratory of the Service. The samples were planted within twenty-four hours after collection. Counts were made of all samples, with the exception of the last seven on the table.

Sample.	Source of water.	Number of bacteria.	Minimum quantity producing fermentation at 42° C.		Pathogenic to guinea pigs.	Behavior on media of those organisms resembling most the <i>Bacillus coli communis</i> .		
			Glucose.	Lactose.		Glucose bouillon.	Neutral red lactose bouillon.	Bouillon.
		Per c. c.	c. c.	c. c.				
1	Distilling tank, ice factory	1,083						
2	Back Spring	245	1.0	1	+	Ferment	Positive.	Cloudy and
3	Tank, ice factory	1,150	1.0	1	+	do	do	Do.
4	Schoolhouse	114	2.0	2	+	do	do	Do.
5	Mrs. Campbell's, Jefferson street.	577	2.0					
6	White house, Jefferson street.	98	2.0					
7	Tap, Mrs. Humphrey's	105	5.0					
8	Wm. Washington house, kitchen tap.	268	1.0			Ferment	Positive.	Do.
9	Waddell house	84						
10	Anderson house, Jefferson street.	184	5.0		b+	Ferment	Positive.	Do.
11	Virginia Military Institute, second stoop sink.	14,263	5.0					
12	Hotel	295						
13	Reservoir							
14	Conner Spring No. 2		3.0					
15	Outside spring No. 1.		.1		b+	Ferment	Positive.	Do.
16	Spigot, Horton Massie.							
17	Spring No. 1		.1			Ferment	Positive.	Do.
18	Conner Spring No. 3.							
19	Spring No. 2		3.0			Ferment	Positive.	Do.

Sample.	Source of water.	Behavior on media of those organisms resembling most the <i>Bacillus coli communis</i> .			
		Litmus milk.	Dunham's.	Potato.	Gelatin.
1	Distilling tank, ice factory				
2	Back Spring	Acid and coagulation.	Indol.	Whitish brown, moist, abundant growth.	No liquefaction.
3	Tank, ice factory	do	do	do	Do.
4	Schoolhouse	do	do	do	Do.
5	Mrs. Campbell's, Jefferson street.				
6	White house, Jefferson street.				
7	Tap, Mrs. Humphrey's				
8	Wm. Washington house, kitchen tap.	No acid; no coagulation.	Indol.	Whitish brown, moist, abundant growth.	Do.
9	Waddell house				
10	Anderson house, Jefferson street.	No acid; no coagulation.	Indol.	Whitish brown, moist, abundant growth.	Do.

^a Slight.

^b Pathogenic to guinea pigs at first inoculation only.

^c A positive reaction on neutral red lactose bouillon consists of canary-yellow color and fluorescence in closed bulb, the open bulb remaining a wine color; gas formation in proportion of 1 part CO₂ to 2 of H₂ and acidity.

Sample.	Source of water.	Behavior on media of those organisms resembling most the <i>Bacillus coli communis</i> .			
		Litmus milk.	Dunham's.	Potato.	Gelatin.
11	Virginia Military Institute, second stoop sink.				
12	Hotel.				
13	Reservoir.				
14	Conner Spring No. 2.				
15	Outside spring No. 1.	No acid; no coagulation.	Indol.	Whitish brown, moist, abundant growth.	No liquefaction.
16	Spigot, Horton Massie				
17	Spring No. 1.	Acid and coagulation.	Indol.	Whitish brown, moist, abundant growth.	Do.
18	Conner Spring No. 3.				
19	Spring No. 2.	Acid; no coagulation.	Indol.	Whitish brown, moist, abundant growth.	Do.

Sample.	Source of water.	Staining Gram's.	Motility.	<i>Bacillus coli communis</i> .
1	Distilling tank, ice factory.			Absent.
2	Back Spring.	Decolorized.	Slight, but not marked.	Present.
3	Tank, ice factory.	do.	do.	Do.
4	Schoolhouse.	do.	do.	Do.
5	Mrs. Campbell's, Jefferson street.			
6	White house, Jefferson street.			
7	Tap, Mrs. Humphrey's.			
8	Wm. Washington house, kitchen tap.	Decolorized.	Slight—brownian.	Not demonstrated.
9	Waddell house.			
10	Anderson house, Jefferson street.	Decolorized.	Slight—brownian.	Do.
11	Virginia Military Institute, second stoop sink.			
12	Hotel.			
13	Reservoir.			
14	Conner Spring No. 2.			
15	Outside spring No. 1.	Decolorized.	Slight—brownian.	Do.
16	Spigot, Horton Massie.			
17	Spring No. 1.	Decolorized.	Slight—brownian.	Do.
18	Conner Spring No. 3.			
19	Spring No. 2.	Decolorized.	Slight—brownian.	Do.

An examination of the foregoing table shows that water from Back Spring, water from the storage tank in the ice factory, and water from the schoolhouse tap contained colon bacillus.

Plants were made on as high as 8 c. c. in glucose and lactose media; but with the exception of the above three places we were unable to find colon in any of the samples of water collected. This does not necessarily exclude the fact that the infection is in the general water supply, but lends additional weight to the supposition that the schoolhouse is a decided center of infection, 11 cases having occurred among the children attending this school.

There was isolated from the sample of water taken from the storage tank in the ice factory an organism which has given every reaction, both biologically and culturally, of the *Bacillus typhosus*. This organism, however, was not obtained from any of the other samples. This is not of especial importance, as the great difficulty of isolating the typhoid organism from water known to be infected has long been recognized.

From the foregoing the following conclusions may be drawn:

1. That the general water supply, at its source or reservoir, is not infected.
2. That on account of the leaks which have been reported in both the sewers and water mains on the same street there is a strong probability of infection of the water supply after it reaches the town.

3. That the cases of fever are, in our opinion, due to localized infection of water, and that the conveyance of infection by flies does not explain the rapid increase and wide distribution of the cases in the month of October.

4. That the present arrangement of cesspools in immediate apposition with hydrants from which drinking water is secured is insanitary and should be remedied.

5. That considering the topography and the location of Back Spring and taking into consideration the results of bacteriological examination of the water from this spring and from the tank in the ice factory containing water from this spring, the manufacture of ice therefrom should be considered dangerous and the spring should be closed for use for all purposes.

6. That the cadets of the institute should be prohibited from using the water from the spring located at the base of the hill on which the institute is situated; that this spring should be closed, the water having been found infected with colon bacillus, and that, being under military control, the drinking water furnished the cadets should be boiled.

7. That arrangements in regard to obtaining water in the lavatories at the institute should be remedied.

8. That the present arrangement of privies and disposal of fecal matter is crude, and is no doubt a factor in perpetuating the prevalence of typhoid fever in this town; that measures should be taken to devise a system for the disposal of human excreta, and in this connection it may be suggested that the pail system properly installed and managed under municipal control would be the one best adapted to remedy the existing conditions.

9. That the great importance of the proper and thorough disinfection of the discharges from persons suffering from typhoid fever should be impressed upon the physicians and families of those affected; for this purpose we recommend chlorinated lime.

Respectfully,

J. C. PERRY,
Passed Assistant Surgeon.

JOHN F. ANDERSON,
Passed Assistant Surgeon and Assistant Director Hygienic Laboratory.
The SURGEON-GENERAL.

CHLORIDE OF ZINC AND "CHLORIDE OF LIME" AS DISINFECTANTS.

Asst. Surg. T. B. McClintic made a study of the antiseptic and germicidal properties of chloride of zinc and chloride of lime. This work is not yet finished. His preliminary report follows:

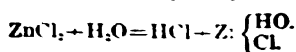
OBJECT OF THE WORK.

These preparations of chlorine have long enjoyed reputations as disinfectants and deodorants. They were both used long before bacteriology had become a science or had even been suspected of taking the important rank in the scientific field that it to-day so rightly holds.

The experimental work with either one seems to be rather meager, especially with chloride of zinc, and it was for the purpose of determining the real value of each as germicidal agents under varying conditions that this work was undertaken.

PROPERTIES OF CHLORIDE OF ZINC.

Zinc chloride, as found on the market to-day, is a white, friable, translucent powder, odorless, and of such caustic properties as to make tasting dangerous unless the salt is highly diluted, when it has an astringent, metallic taste. It is very deliquescent and possessed of strong dehydrating powers, removing oxygen and hydrogen from organic matter in the form of water. In this latter particular and as a deodorant it resembles permanganate of potash. It is soluble in 0.3 part of water, very soluble in alcohol, and in aqueous solution approximating anything like saturation is a viscid, colorless fluid producing no precipitate, but in somewhat dilute solutions easily undergoes partial hydrolysis, the precipitate consisting of basic or hydroxy-chlorides, e. g.—



Though it has long had a reputation as an antiseptic and disinfectant, it has been gradually realized to be much overrated and its use in that field to-day is very limited. It is sometimes used as one of the ingredients of some of the proprietary preparations found on the market to-day and vaunted for their disinfectant powers, but its use is principally that of a deodorant.

PROPERTIES OF "CHLORIDE OF LIME" (CHLORINATED LIME).

This is a white powder found on the market under the trade name of bleaching powder.

It is prepared by passing nascent hydrogen over unslaked lime and, according to the United States Pharmacopœia, should contain not less than 35 per cent of available chlorine. It has great affinity for water, and if exposed to the air the powder becomes moist, gradually liberating its chlorine.

It is very sparingly soluble in water—about 1 per cent—and even this, on standing, throws down a white precipitate, leaving a turbid liquid above. The solution has an indefinite composition, but is generally supposed to contain calcium hypochlorite, calcium chloride (which has a great affinity for water), and calcium hydrate, which is largely insoluble and in the dilute solutions forms the bulk of the precipitate.

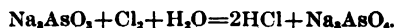
The calcium hypochlorite, upon which the efficiency of the solution depends, is easily broken up, even by the carbon dioxide found in the air and water, into hypochlorous acid, and this acid is so unstable that in the presence of light it is decomposed into hydrochloric acid and free chlorine, both of which are active germicidal agents.^a

Penot's method for determining the available chlorine was used as follows:^b

"The sample is well and quickly mixed, and 7.17 gm. weighed, put into a mortar, a little water added and the mixture rubbed to a smooth cream; more water is then stirred in with the pestle, allowed to settle a little while, then poured off into a liter flask; the sediment again rubbed with water, poured off, and so on repeatedly, until the whole of the chloride has been conveyed into the flask without loss, and the mortar washed quite clean. The flask is then filled to the mark with water, well shaken, and 50 cubic centimeters of the milky liquid taken out with a pipette, emptied into a beaker, and the $\frac{1}{10}$ arsenious solution delivered in from a burette until a drop of the mixture taken out with a glass rod and brought in contact with the prepared starch paper gives no blue stain.

The starch paper may be dispensed with by adding arsenious solution in excess, then starch, and titrating residually with $\frac{1}{10}$ iodine till the blue color appears. The number of cubic centimeters of arsenic used shows direct percentage of available chlorine."

The essential reaction consists in the conversion of sodium arsenite into sodium arseniate, thus:



Iodine acts in the same way and is used to mark the end of the reaction.

By this method it was found that chlorinated lime, in aqueous solution, left exposed to the air loses about 1 per cent of available chlorine daily. The highest percentage found in several specimens of "bleaching powder" bought on the open market was 29 per cent, and it was with this specimen that these experiments were made, though it will be noticed that this strength is below that required by the United States Pharmacopœia.

It was kept in a sealed jar and made up fresh when needed. Some of the specimens obtained on the market contained a very low percentage of chlorine, one as low as 2 per cent, and one that had been on hand at the laboratory for some time about 13 per cent. These specimens were in a more or less pasty condition, holes having been oxidized in the container, water absorbed, and the chlorine liberated.

Chlorinated lime, unlike chloride of zinc, has efficiently withstood the tests of practical use and scientific investigation, and to-day is one of the most widely used disinfectants and deodorants we possess. Its insolubility and instability are objectionable features, but its greatest fault is the power that organic matter has of uniting with it to form a comparatively inert substance and

^a Rosenau: Disinfection and disinfectants.

^b Sutton: Volumetric analysis, p. 186.

probably prevents it from being the most potent germicide we possess. This is why in the disinfection of the excreta from the sick it is necessary to use about a 4 per cent solution, although, as will be shown later, it will kill most of the pathogenic organisms almost instantly in dilutions as high as 1:10,000 in the absence of organic matter.

ANTISEPTIC PROPERTIES OF CHLORIDE OF ZINC.

For this purpose Erlenmeyer flasks of about 100 c. c. capacity were partially filled with nutrient bouillon and the zinc chloride added in various definite percentages.

When prepared in this way the chloride of zinc causes a white cloudy precipitate to form in the lower portion of the bouillon, leaving the upper portion a straw color, as if nothing had been added to it, the amount of the precipitate depending upon the amount of chloride of zinc added. The flasks, having been prepared in this way, were abundantly inoculated with different materials, such as garden earth, fresh stable manure, particles of hay, etc., and placed at room temperature. From day to day up to the end of the fourteenth day the appearance of molds, odors, and bacterial growths was noted, the latter by the clouding of the bouillon and the use of the microscope.

The following are the results when kept at room temperature:

[+ means bacterial growth; - means no bacterial growth; s. m. means surface mold; b. m., mold on the bottom, etc.]

WISPS OF HAY.

Percent- age used.	Day on which growth appeared.							
	Second.	Third.	Sixth.	Seventh.	Tenth.	Eleventh.	Twelfth.	Fourteenth.
1:1000	s. m. -	s. m. +	.....	.....	.....	.....	.....	.....
1:500	s. m. -	s. m. +	.....	.....	.....	.....	.....	.....
1:300	s. m. -	s. m. +	.....	.....	.....	.....	.....
1:200	s. m. -	.....	s. m. +	.....	.....
1:100	s. m. -	.....	.....	s. m. -
1:75	s. m. -	.....	.....	s. m. -
1:50	a Mold.	a Mold.
1:45	(b)
1:40
1:35

a This was only mold on head of hay and was really not in the solution.

b No growth.

STABLE MANURE.

Percent- age used.	Day on which growth appeared.							
	Second.	Third.	Fourth.	Fifth.	Eighth.	Tenth.	Eleventh.	Fourteenth.
1:1000	s. m. +	.....	.....	.....	.....	.....	.....	.....
1:500	s. m. +	.....	.....	.....	.....	.....	.....
1:300	s. m. +	.....	.....	.....	.....	.....
1:200	s. m. -	s. m. +	.....	.....	.....
1:100	b. m. -	.....	b. m. -
1:7500	b. m. -	b. m. -
1:5000	b. m. -
1:4500	b. m. -
1:4000	b. m. -
1:3500	b. m. -

a No growth.

GARDEN EARTH.

Percent- age used.	Day on which growth appeared.								
	Second.	Third.	Fourth.	Fifth.	Sixth.	Seventh.	Tenth.	Thir- teenth.	Four- teenth.
1:1000	s. m. +	-----	-----	-----	-----	-----	-----	-----	-----
1:5000	s. m. +	-----	-----	-----	-----	-----	-----	-----	-----
1:3000	-----	+	s. m. +	-----	-----	-----	-----	-----	-----
1:2000	-----	-----	-----	s. m. -	s. m. +	-----	-----	-----	-----
1:1000	-----	-----	-----	s. m. -	-----	-----	-----	-----	s. m. -
1:7500	-----	-----	-----	-----	-----	b. m. -	-----	-----	b. m. -
1:5000	-----	-----	-----	-----	-----	-----	s. m. -	-----	s. m. -
1:4500	-----	-----	-----	-----	-----	-----	s. m. -	-----	s. m. -
1:4000	-----	-----	-----	-----	-----	-----	-----	-----	b. m. -
1:3500	-----	-----	-----	-----	-----	-----	-----	-----	(a)

^a No growth.

These experiments were repeated and the results verified.

From the above it will be observed that the minimum strength of chlorid of zinc that will inhibit the growth of molds is about 1 part in 45, varying slightly with the character of the material used for contamination; while the strength necessary to prevent bacterial growth is between one-half and 1 per cent.

In the dilutions as high as 1:500 there were no unpleasant odors given off.

CHLORINATED LIME.

Limited work was done along the same lines with chlorinated lime as with chlorid of zinc in order to find out how their antiseptic properties compared. Various strengths were prepared in nutrient bouillon and inoculated in the same manner as before—with garden earth, stable manure, and wisps of hay.

The results show that in strengths of 1 per cent and less its antiseptic properties are practically nil, due, no doubt, to the formation of a comparatively inert substance when the chlorinated lime comes into contact with the organic matter contained in the nutrient bouillon.

GERMICIDAL PROPERTIES.

For determining the germicidal value of these two substances the experiments in each were similar.

Various definite percentages of each were prepared in distilled water and about 4.5 cubic centimeters placed in test tubes. These were then inoculated by adding about 0.5 cubic centimeter of a thick emulsion, in distilled water, of the organism to be used, carrying over as little organic matter as possible. Cultures of the different pathogenic organisms used were grown on agar slants for twenty-four hours at a temperature of 37° C.

Plants were then made in sterile nutrient bouillon at definite intervals by means of the wire loop. They were then placed in the incubator at a temperature of 37° C., and the results noted from day to day.

The results from the different organisms used with chlorid of zinc will be given first, and are as follows:

[+ means growth ; - means no growth.]

BACILLUS COLI COMMUNE.

Percent- age used.	Time of exposure in minutes.									
	5.	7.	8.	10.	15.	20.	25.	30.	40.	50.
5.....	+	+	+	+	+	+	+	+	+	+
10.....	+	+	+	+	+	+	+	+	+	+
15.....	+	+	+	+	+	+	+	+	+	+
25.....	+	+	-	-	-	-	-	-	-	-

BACILLUS TYPHOSUS.

Percent- age used.	Time of exposure in minutes.									
	1.	2.	5.	10.	15.	20.	30.	40.	50.	60.
5.....	+	+	+	+	+	+	+	+	+	+
10.....	+	+	+	+	-	-	-	-	-	-
15.....	+	+	-	-	-	-	-	-	-	-
25.....	+	-	-	-	-	-	-	-	-	-

VIBRIO CHOLERÆ.

Percent- age used.	Time of exposure in minutes.										
	1.	2.	5.	7.	10.	15.	20.	30.	40.	50.	60.
0.5.....	+	+	+	+	+	+	+	+	+	-	-
1.0.....	+	+	+	+	+	+	-	-	-	-	-
3.0.....	+	+	+	+	+	-	-	-	-	-	-
5.0.....	+	+	+	-	-	-	-	-	-	-	-
10.0.....	+	-	-	-	-	-	-	-	-	-	-

BACILLUS DYSENTERIÆ (SHIGA).

Percent- age used.	Time of exposure in minutes.							
	1.	4.	5.	10.	20.	30.	50.	60.
5.....	+	+	+	+	+	+	+	+
10.....	+	+	+	+	+	+	-	-
15.....	+	+	+	+	-	-	-	-
25.....	+	+	-	-	-	-	-	-

BACILLUS DIPHTHERIÆ.

Percent- age used.	Time of exposure in minutes.							
	1.	3.	5.	10.	20.	30.	50.	60.
3.....	+	+	+	+	+	+	+	+
5.....	+	+	+	+	+	+	-	-
10.....	+	+	-	-	-	-	-	-
25.....	+	-	-	-	-	-	-	-

STAPHYLOCOCCUS PYOGENES AUREUS.

Percent- age used.	Time of exposure in minutes.							
	3.	10.	15.	20.	30.	40.	50.	60.
3.....	+	+	+	+	+	+	+	+
7.....	+	+	+	+	+	-	-	-
10.....	+	+	+	+	+	-	-	-
25.....	+	+	+	+	-	-	-	-

STAPHYLOCOCCUS EPIDERMIDIS ALBUS.

Percent- age used.	Time of exposure in minutes.							
	3.	5.	10.	20.	30.	40.	50.	60.
5.....	+	+	+	+	+	+	+	+
10.....	+	+	+	+	+	+	+	+
15.....	+	+	+	+	+	+	+	+
25.....	+	+	+	+	+	+	+	+

Controls all grew within twenty-four hours.

The above results demonstrate the inefficiency of chloride of zinc as a germicide, as it will be observed that the pyogenic organism *Staphylococcus pyogenes aureus* lives for fifty minutes in a strength of 10 per cent and colon bacilli for twenty minutes in the same strength. The *Vibrio cholera* is the only one destroyed by reasonable strength in a reasonable time.

For its action on spore-bearing organisms experiments were made with seven-day old cultures of the *Bacillus subtilis* and *Bacillus anthracis*, both of which showed many spores. The results show that anthrax spores are still capable of multiplying after having been in 25 per cent solution for seventy-two hours and subtilis spores after having been in 100 per cent solution for seventy-two hours.

The strength required for germicidal action and its astringent properties practically eliminate chloride of zinc from the list of useful disinfectants.

Results with chlorinated lime under the same conditions were as follows; available chlorine, 20 per cent.

[+ means growth: — means no growth.]

BACILLUS COLI COMMUNE.

Percent- age used.	Time of exposure in minutes.						
	1.	3.	5.	10.	20.	30.	40.
1:20,000	+	+	+	+	+	—	—
1:10,000	+	+	+	—	—	—	—
1:5,000	+	+	—	—	—	—	—
1:2,000	—	—	—	—	—	—	—
1:1,000	—	—	—	—	—	—	—

BACILLUS TYPHOSUS.

Percent- age used.	Time of exposure in minutes.						
	1.	3.	5.	10.	20.	30.	40.
1:20,000	+	+	+	+	—	—	—
1:10,000	+	+	+	—	—	—	—
1:5,000	+	—	—	—	—	—	—
1:2,000	—	—	—	—	—	—	—
1:1,000	—	—	—	—	—	—	—

BACILLUS DYSENTERIÆ.

Percent- age used.	Time of exposure in minutes.						
	1.	3.	5.	10.	15.	20.	30.
1:20,000	+	+	—	—	—	—	—
1:10,000	—	—	—	—	—	—	—
1:5,000	—	—	—	—	—	—	—
1:2,000	—	—	—	—	—	—	—
1:1,000	—	—	—	—	—	—	—

VIBRIO CHOLERÆ.

Percent- age used.	Time of exposure in minutes.						
	1.	3.	5.	10.	15.	20.	30.
1:20,000	+	—	—	—	—	—	—
1:10,000	—	—	—	—	—	—	—
1:5,000	—	—	—	—	—	—	—
1:2,000	—	—	—	—	—	—	—
1:1,000	—	—	—	—	—	—	—

STAPHYLOCOCCUS PYOGENES AUREUS.

Percent- age used.	Time of exposure in minutes.						
	1.	3.	5.	10.	15.	20.	30.
1:20,000..	+	+	+	+ ²	+ ²	+ ²	—
1:10,000..	+	+	+ ²	+ ²	—	—	—
1:5,000...	+ ²	+ ²	—	—	—	—	—
1:2,000...	—	—	—	—	—	—	—
1:1,000...	—	—	—	—	—	—	—

STAPHYLOCOCCUS EPIDERMIS ALBUS.

Percent- age used.	Time of exposure in minutes.						
	1.	3.	5.	10.	15.	20.	30.
1:20,000..	+	+	+	+ ²	—	—	—
1:10,000..	+	+	+	—	—	—	—
1:5,000...	+	—	—	—	—	—	—
1:2,000...	—	—	—	—	—	—	—
1:1,000...	—	—	—	—	—	—	—

+² means grew at end of two days.+³ grew at end of three days, etc.

Six controls all grew at the end of twenty-four hours.

It will be seen that when used under conditions as above chlorinated lime is a most powerful germicide, destroying both the bacillus coli communis and the Staphylococcus pyogenes aureus in a percentage of 1 to 10,000 in ten minutes. The bacillus dysenteriae and Vibrio cholerae were killed almost instantly in a percentage of 1 to 20,000. Under these conditions chlorinated lime may be considered almost without equal from a germicidal point of view; but organic matter greatly reduces its efficiency when brought in contact with it, and for this reason some experiments were carried out in order to determine the measure of this influence.

For this purpose certain definite quantities of substances, such as nutrient bouillon, urine, etc., containing organic matter, were added to the water used in making up the solutions of chlorinated lime and the effect on the germicidal powers noted.

A strength of 1 to 1,000 chlorinated lime was used and the quantity of bouillon added varied inversely as the quantity of water added. Chlorinated lime being so widely used in the disinfection of the excreta from the sick, cultures of typhoid and colon were mixed and used for conducting the experiments.

The cultures were grown on agar at a temperature of 37° C. for twenty-four hours.

The solutions having been thus prepared and placed in test tubes, the inoculations with the mixed cultures were made as usual and plants taken from each specimen by means of the wire loop in nutrient bouillon at certain definite intervals. The plants were placed in the incubator at 37° C. and the results noted from day to day.

The following are the results with nutrient bouillon:

[+ means growth; — no growth.]

Percentage of			Time exposure in minutes.									
Chloride of lime.	Water.	Bouillon.	1.	3.	5.	10.	15.	20.	30.	40.	50.	60.
1:1,000...	50	50	+	+	+	+	+	+	+	+	+	+
	75	25	+	+	+	+	+	+	+	+	+	—
	80	10	+	+	+	+	—	—	—	—	—	—
	85	5	+	+	+	+	—	—	—	—	—	—
	88	2	+	+	+	—	—	—	—	—	—	—
	90	1	—	—	—	—	—	—	—	—	—	—
	100	0	—	—	—	—	—	—	—	—	—	—

Percentage of—			Time exposure in minutes.									
Chloride of lime.	Water.	Bouillon.	1.	3.	5.	10.	15.	20.	30.	40.	50.	60.
1:1,000...	50	50	+	+	+	+	+	+	+	+	+	+
	75	25	+	+	+	+	+	+	+	+	+	+
	90	10	+	+	+	+	—	—	—	—	—	—
	95	5	+	+	—	—	—	—	—	—	—	—
	98	2	+	+	—	—	—	—	—	—	—	—
	99	1	+	+	—	—	—	—	—	—	—	—
	100	0	—	—	—	—	—	—	—	—	—	—

From this it will be seen that the presence of organic matter markedly reduces the germicidal powers of chlorinated lime and makes necessary much greater percentages in the disinfection of excreta, etc., than would otherwise be required.

For the sake of comparison various percentages of chlorinated lime in water and bouillon, respectively, were prepared and the germicidal powers tested and compared.

The organisms used for inoculation were typhoid and colon bacilli and the results were as follows:

[+ means growth ; — no growth.]

Percentage chloride of lime.	Solvent.	Time exposure in minutes.							
		1.	5.	10.	15.	20.	30.	40.	50.
1:5,000.	Water.....	+	+	—	—	—	—	—	—
1:5,000.	Bouillon.....	+	+	+	+	+	+	+	+
1:1,000.	Water.....	—	—	—	—	—	—	—	—
1:1,000.	Bouillon.....	+	+	+	+	+	+	+	+
1:500...	Water.....	—	—	—	—	—	—	—	—
1:500...	Bouillon.....	+	+	+	+	+	+	+	+

CONCLUSIONS.

Chloride of zinc.—Chloride of zinc has feeble powers as a deodorant and anti septic. In strengths of 0.2 per cent or greater it acts as a deodorant, while the minimum strength that will inhibit bacterial growth is between 0.5 and 1 per cent. The growth of molds is not entirely inhibited by a strength of 2 per cent, as it will be noticed that in a percentage of 1 to 40 there was a slight growth on the thirteenth day.

The germicidal powers of chloride of zinc are weak and can not be relied upon for this purpose, as the *Bacillus coli communis* is not destroyed in a 5 per cent solution in one hour, and it takes eight minutes for a 25 per cent solution to kill the same organism. The *Staphylococcus pyogenes aureus* is not killed in twenty minutes in a 25 per cent solution, but is killed in thirty minutes in the same percentage.

Its action on spores shows that the spores of *Bacillus subtilis* are not killed in seventy-two hours in 100 per cent solution.

The feeble germicidal powers of chloride of zinc, as well as its cost and its caustic properties, practically eliminate it from the useful and reliable disinfectants.

Chlorinated lime.—This is a most powerful germicide under certain circumstances; but unfortunately the conditions under which it is usually used are such as to greatly reduce its potency.

In aqueous solution free from organic matter it will kill the *Bacillus coli communis* in five minutes in a strength of 1 to 5,000 of distilled water. The *Bacillus typhosus* is killed in three minutes in the same strength, while the *Vibrio cholerae* is killed in a percentage of 1 to 20,000 of distilled water in less than three minutes.

Coming into contact with organic matter, as it does in the disinfection of excreta, its germicidal powers are greatly lowered, so that it is necessary to use much higher percentages than would otherwise be required. When added to

nutrient bouillon for the purpose of determining its antiseptic powers, the potency is so much reduced by the organic matters present as to require about the same strengths as are necessary with chloride of zinc.

By referring to the experiments made above, in which certain percentages of nutrient bouillon were added to the distilled water used as a solvent, the marked effect exerted by the organic matters will be as a strength of 1 to 1,000 in 90 per cent distilled water, and 10 per cent bouillon does not kill the *Bacillus typhosus* and *Bacillus coli communis* in ten minutes, whereas when no bouillon is added it kills the same organisms in less than a minute. The same is true when urine is added instead of bouillon, and demonstrates how markedly its potency is lowered when used for disinfecting excreta.

Chlorinated lime, as found on the market to-day, is unstable, and if exposed to the air loses about 1 per cent of chlorine daily, so that the percentage of available chlorine is variable and unreliable.

The division of zoology was established August 26, 1902, by the appointment of Ch. Wardell Stiles, Ph. D., as chief of the division. His report for the fiscal year just ended follows:

REPORT OF THE DIVISION OF ZOOLOGY OF THE HYGIENIC LABORATORY.

[By Dr. CH. WARDELL STILES, *Chief of Division.*]

SIR: In accordance with paragraph 767, Service Regulations, I have the honor to submit the following second annual report of the division of zoology for the fiscal year ending June 30, 1904:

QUARTERS.

The division continued in temporary quarters in the Georgetown Medical School until March, 1904, when we moved into the new laboratory building, where we are now settled in permanent quarters.

FIELD WORK.

Two field trips have been undertaken during the fiscal year, as follows:

During the months of May and June I have visited the Bitter Root Valley, Montana, to investigate the so-called "spotted fever" of that district.

Mr. Garrison spent the early part of the fiscal year in Middletown, Conn., studying the intestinal parasites of the insane.

HOOK-WORM DISEASE (UNCINARIASIS).

Breeding experiments of the hook-worms (*Uncinaria americana* or *Necator americanus*) were inaugurated in July, 1903, in order to study the embryo and larva of this parasite and its methods of infection. This work was interrupted because of certain unfavorable circumstances and has not yet been completed.

Publications by various authors and determinations made in this division continue to show the prevalence of this disease, more especially in certain Southern States, and its economic importance is coming more and more into prominence.

PARASITES OF PENNSYLVANIA MINERS.

In my first annual report I referred to the possibility of finding hook-worm disease in the coal miners of Pennsylvania. During the present fiscal year one such case has been reported by Dr. J. M. Wainwright, of Scranton, Pa., the diagnosis being confirmed in this division. We have also determined one case of infection with the parasite of Cochiti China diarrhea (*Strongyloides stercoralis*) from specimen forwarded by Doctor Wainwright. The same patient showed infection with eelworms (*Ascaris lumbricoides*) and whipworms (*Trichuris trichiura*).

INTESTINAL PARASITES OF THE INSANE.

The division has now completed an examination of about 3,500 insane patients, undertaken in order to determine the frequency of intestinal parasites. The results of this work are now being collated and will be ready for publication this coming winter.

DWARF TAPEWORM (*Hymenolepis nana*).

In my first annual report reference was made to the presence of the dwarf tapeworm (*Hymenolepis nana*) in this country. We have now demonstrated that it is much more common in the United States than has been suspected. An extensive bulletin on this parasite and two other members of the same group has been prepared and is now in press.

TREMATODE PARASITES OF MAN.

It is worthy of note that Passed Asst. Surg. Mark J. White, of this Service, has reported 18 cases of infection with the Asiatic liver fluke (*Opisthorchis sinensis*) among Chinese in California, and that Dr. A. D. MacKenzie, of Portland, Oreg., has found a case of parasitic hemoptysis, caused by *Paragonimus westermanii*, in a Japanese in Portland. Both of these diagnoses have been confirmed in this division.

Because of these cases, also because of inquiries regarding trematode diseases, and finally because of the increasing importance of this class of parasites to the country on account of our closer relations with the Asiatic countries, I have prepared a bulletin entitled "Illustrated Key to the Trematode Parasites of Man." This bulletin is now in press and will soon be issued.

INVESTIGATIONS ON SO-CALLED "SPOTTED FEVER" OF THE ROCKY MOUNTAINS.

My studies on "spotted fever" are not yet prepared for press, but I have been unable to confirm the piroplasma-tick-spermophile theory relative to the etiology, transmission, and origin of this disease. My conclusions were published in the Public Health Reports of August 19, 1904.

ZOOLOGICAL COLLECTION.

The following specimens have been added to the collection during the fiscal year:

Catalogue No.	Nature of specimen.	Name.	Sex.	Locality.	When collected.	Received from—	Collected by—	When entered.	Determined by—	Host.
9442	Alcohol	<i>Uncinaria americana</i>	Male; female.	Near Raleigh, N. C.	July, 1903	Dr. R. H. Lewis		1903	Stiles.	<i>Homo sapiens</i> .
9443	do	do		Tampa, Fla.	June 20, 1903.	Dr. J. S. Helms	Dr. J. S. Helms	July 28	J. S. Helms	Do.
9444	Dry	<i>Pulex serraticornis</i>		Philadelphia, Pa.	July, 1903	Dr. M. Behrend	Dr. M. Behrend	July 31	Stiles	
9445	Alcohol	<i>Strongylus (larva), Strongylidae.</i>		Mobile, Ala.	do	E. D. Bondurant	E. D. Bondurant	July 10	Coquillett.	<i>Homo sapiens</i> .
9446	Dry	<i>Culex tritaenatus</i> Say	Female	Laredo, Tex.	Aug. 5, 1903.	H. J. Hamilton	H. J. Hamilton	do	Coquillett, Stiles.	
9447	do	<i>Tenthrigonechus per- turbans</i> Walk.	do	do	do	do	do	do	do	
9448	Alcohol	<i>Culex sylvestris</i> .		Minneapolis, Minn.	July 15, 1903	L. O. Howard	Pergandie	do	Howard	<i>Culex sollicitans</i> .
9449	do	<i>Agamomermis culicis</i> .		New Jersey	Summer, 1903.	J. B. Smith	J. B. Smith	July 11	Smith, Stiles	<i>Homo sapiens</i> .
9450	do	<i>Hymenolepis nana</i>		Amarillo, Tex.	August, 1903	L. E. Magnenet	L. E. Magnenet	do	Stiles.	
9451	Glycerin	<i>Uncinaria (Nematode) americana</i> .	Male; female.	Porto Alegre, Brazil.	July, 1903.	Dr. O. de Oliveira	Dr. O. de Oliveira	Aug. 17	do	
9452	Alcohol	do	do	Mobile, Ala.	August, 1903	E. D. Bondurant	E. D. Bondurant	Aug. 28	Stiles, Willets.	Do.
9453	do	do	do	Lenoir, N. C.	Nov., 1903	Dr. W. P. Ivey	Dr. W. P. Ivey	Nov. 26	Stiles.	Do.
9454	do	<i>Agchylotoma duodecimale</i> .		Vera Cruz, Mexico	do	M. J. Rosenau	M. J. Rosenau	do	Stiles	Do.
9455	do	<i>Tinea saginata</i>		Washington, D. C.	do	Dr. L. A. Walker	Dr. L. A. Walker	do	do	Do.
9456	do	<i>Ascaris tumefacta</i>		do	do	Dr. J. Diggs	Dr. J. Diggs	do	do	Do.
9457	do	<i>Spurious parasite, Ipanama.</i>		do	do			do	do	Do.
9458	Formalin	<i>Metatetranychus</i> sp.		Adirondacks, N. Y.	Winter, 1904	R. M. Pearce	R. M. Pearce	Mar. 24	do	Deer.
9459	do	<i>Puccinia magni</i>		do	do	do	do	do	do	Do.
9460	do	do		do	do	do	do	do	do	Do.
9461	Alcohol	<i>Ascaris rana</i> .		St. George Island, Alaska.	Winter, 1903	T. H. Hitchcock	J. Judd	Mar. 26	Stiles, Garman.	<i>Vulpes lagopus</i> .
9462	do	<i>Monocentides lineatus</i>		do	do	do	do	do	do	Do.
9463	Alive	<i>Dermacentor</i> sp.	Female	Fort Missoula, Mont.	April, 1904	Dr. J. Carroll	A. A. Ashburn	Apr. 28	Stiles.	<i>Homo sapiens</i> .
9464	Alcohol	<i>Agamomermis</i> (worm and larva).		Brazil.	Feb., 1904	Dr. A. Lutz	Dr. A. Lutz	Apr. 27	do	

DETAIL TO UNITED STATES BUREAU OF ANIMAL INDUSTRY.

Until March, 1904, I continued in charge of the division of zoology, United States Bureau of Animal Industry, but upon moving into the new Hygienic Laboratory I was relieved of further supervision of the said division and now act merely as a consultant in medico-zoological matters.

DETAILED TO MEDICAL MEETINGS.

Upon request of the Mississippi State Medical Association, I was detailed to attend the annual meeting at Jackson, Miss., to give an address on hookworm disease.

Respectfully,

CH. WARDELL STILES,
Chief Division of Zoology.

The DIRECTOR OF THE HYGIENIC LABORATORY.

The division of pharmacology was established March 1, 1904, by the appointment of Reid Hunt, Ph. D., M. D., as chief of the division. The report of this division is as follows:

WASHINGTON, July 28, 1904.

SIR: In accordance with paragraph 757 of the regulations, I have the honor to submit the following report on the operations of the division of pharmacology for the fiscal year ending June 30, 1904.

WORK ABROAD.

The laboratory not being ready for occupation until March, 1904, I spent the greater part of the year in Germany, working in the Royal Institute for Experimental Therapeutics at Frankfurt-on-the-Main with Professor von Ehrlich. Several lines of work were carried on here. Two of these (on nitriles and some new quinine derivatives) were carried to completion.^a

EXPERIMENTS WITH NITRILES.

An extensive series of experiments was made with a large number of nitriles and their antidotes. The poisonous action of these substances resembles the intoxication seen in certain diseases; in fact, several eminent physicians believe that substances of this class (formed in the body by processes of abnormal metabolism from proteids) are the cause of some of the symptoms seen in certain diseases of man. Hence it seemed probable that a study of the toxicology of these compounds and their antidotes would prove of interest. Efficient antidotes to a number of these poisons were found, and many interesting relations between chemical and physiological action were brought to light. Among these antidotes are certain sulphur compounds. It is hoped that the fuller knowledge obtained of the action of these sulphur compounds will aid in the discovery of antidotes to a number of other poisons. Thus there is every reason to believe that sulphur compounds may be found which will serve as antidotes to carbolic acid, to indol (probably a source of auto-intoxication in man), to thymol (the use of which in the treatment of the hookworm disease, e. g., is not entirely unaccompanied by danger), etc.

EXPERIMENTS WITH ALCOHOL.

Experiments were also carried on on the relation of alcohol to the toxicity of certain nitriles and isonitriles. Toward some of the former alcohol was found to have a marked antidotal action, while the toxicity of the latter was greatly increased by it. By using substances the exact composition of which is known it was possible to find probable explanations of the action of alcohol, and it is hoped that these results will lead to a better understanding of the fundamental action of alcohol in health and disease. It is believed that these are the first

^a The results of these experiments have been published in the "Archives Internationales" de Pharmacodynamie et de Thérapie, Vol. XII. These papers were read by invitation to the Society for Experimental Biology and Medicine in New York; abstracts have appeared in American Medicine and in Science.

experiments in which alcohol has been conclusively shown to have an antidotal action toward other poisons, and the results may aid in formulating more definitely the conditions under which it is desirable to use alcohol in therapeutics. At present the use of alcohol is almost entirely empirical, and there are wide differences of opinion among physicians as to when and how it should be used.

Experiments are now being performed on the relation of chronic alcohol poisoning to the action of certain other poisons and some new and interesting results have already been obtained. Here again the advantages of using well-known chemical compounds instead of such complicated agents as toxins and bacteria are evident when the object is to obtain a deeper insight into the effects of chronic alcoholism.

EXPERIMENTS WITH QUININE DERIVATIVES.

A series of experiments was carried out with a number of new quinine derivatives, the object being to determine, if possible, the chemical groups in the quinine molecule upon which the desirable as well as the undesirable action of this substance depends. The experiments led to the discovery of some interesting relations between the chemical composition and physiological action of quinine, and also to the fact that one of the new derivatives (hydrochlorquinine) has properties which may prove of decided therapeutic value. This compound was found to be more toxic for certain infusoria than is quinine itself, while it is less poisonous than the latter for mammals. Experiments will be made in the near future to determine whether it is more efficient in the treatment of malaria, especially of certain severe forms, and perhaps of other diseases due to protozoa, than is quinine.

EXAMINATION OF DRUGS.

According to instructions, samples of drugs and other medical supplies used in this Service are sent to this laboratory by the purveyor to be tested as to their strength and purity. Over a hundred such samples have already been examined. This work has given some definite data upon which to judge of the frequency with which impure or adulterated drugs are placed on the market by "responsible firms." In the agitation for "pure drugs" reports of actual examinations of this kind are seldom given. Of the 100 drugs so far examined about a fourth have been found not to conform to the standards of the United States Pharmacopœia, and the rejection of most of these was recommended. It should be noted, however, that in none of the cases investigated were more than the merest traces of injurious impurities present, nor were the preparations often found to be far below the required strength. In very few cases (certain volatile oils) did there seem to be evidence of intentional adulteration; in the other cases there was evidently a failure to properly purify the product or the latter was made from impure substances.

In addition to the above, various miscellaneous analyses (examinations of water, formaldehyde, prepared milk, etc.) have been made.

It is hoped to continue the work of this Division on the above lines (1) to provide that the drugs used in this Service are the best at present obtainable, and (2) to discover, when possible, remedies superior to those now known and to obtain a deeper insight into their actions and into pathological processes.

Respectfully,

REID HUNT,

Chief Division of Pharmacology.

The DIRECTOR OF THE HYGIENIC LABORATORY.

The above report covers the transactions in the laboratory for the fiscal year.

Respectfully,

M. J. ROSENAU,

Passed Assistant Surgeon, Director.

The SURGEON-GENERAL.

INVESTIGATION OF YELLOW FEVER.

ABSTRACT OF REPORT OF THE FRENCH YELLOW-FEVER COMMISSION OPERATING AT RIO DE JANEIRO, BRAZIL.

In 1901 a commission composed of Messrs. Marchoux, Salimbeni, and Simond, of the Pasteur Institute, were appointed to conduct investigations in regard to the etiology of yellow fever and the mosquito (*Stegomyia fasciata*) in the transmission of the disease at Rio de Janeiro. This commission rendered a report which was published in the annals of the Pasteur Institute in November, 1903. The report has been translated in the Bureau of the Public Health and Marine-Hospital Service, and from this translation the following abstract of salient features has been made:

The commission concludes that the infecting principle in the blood of yellow-fever patients remains active for five days when kept in defibrinated blood under liquid vaseline, but that at the end of eight days the infectivity of the blood has disappeared. They deduce as a result of their experiments that the blood contains this infecting agent during only the first three days of the disease.

They deduce further from their experiments that the blood serum of a yellow-fever convalescent possesses clearly preventive properties. They further deduce as the result of experiments upon 11 individuals made in hospital that the blood serum of a yellow-fever convalescent possesses therapeutic properties of considerable curative value.

In regard to the mosquito *Stegomyia fasciata*, their work is particularly valuable. They point out that the habits of the *Stegomyia fasciata* differ very much from those of most other mosquitoes. One of the marked peculiarities of the species is its extreme susceptibility to differences of temperature. It manifests its greatest activity when the thermometer stands at 25° C. Beyond 39° C. the insect dies. At 15° C. to 16° C. the insect becomes inert and ceases to bite. At 12° to 14° it is benumbed and flies with great difficulty. All of the acts of its life are much influenced by the temperature of the surrounding atmosphere.

The female *Stegomyia* alone bites. The female is perfectly capable of biting immediately after metamorphosis. Within twenty-four hours she bites readily. Within forty-eight hours of metamorphosis and at temperatures between 26° and 35° C. she will bite readily at any hour of the day if recently fecundated, but especially beginning at about 11 o'clock in the morning. If the temperature is between 19° and 25° C. she bites less readily. At temperatures between 14° and 18° C. she does not seek to bite at all unless artificially warmed by contact with the skin of the victim. She bites less readily between 22° and 25° C., but a temperature of 27° to 30° C. is that which suits the insect best.

LAYING.

After having filled herself with blood the female seeks water upon which to lay her eggs. Laying is generally effected during the night. The average number of eggs is from 70 to 80. Temperature has an influence upon this act, it taking place most readily at a temperature

of 27° to 28° C. during the night, under which conditions of temperature laying takes place within forty-eight hours after biting. If the night temperature is from 25° to 27° C. the laying takes place on the fourth or fifth day. If between 20° and 25° C. it is possible up to the seventh or eighth day, and if below 20° C. it may be delayed up to twenty-six or twenty-seven days.

HATCHING.

Hatching is best accomplished at a temperature of 28° C., at which temperature the eggs hatch on the second or third day. If the temperature is as low as 25° C. it takes place on the fourth day. If between 20° to 25° C. hatching takes place on the fifth to seventh day, but does not proceed with regularity. The eggs do not seem to hatch at a temperature below 20° C., though they may be preserved at much lower temperatures, even as low as zero, but if brought back to favorable conditions of temperature, hatching proceeds with considerable regularity. The eggs may be immersed in water and a considerable proportion of them still hatch. If dried before immersion, their preservation is still better assured.

HABITS.

The *Stegomyia* is a domestic mosquito, preferring for laying her eggs deposits of water such as are found in the interior and in the immediate neighborhood of houses. They seem to thrive better in rain than in spring water.

PUPAL STAGE.

With temperatures ranging from 26° to 27° C. by night and 28° to 31° C. by day the larvæ of the *Stegomyia* arrive at the pupal stage seven days after hatching, and at the perfect insect stage on the ninth day. In a majority of instances, however, this latter stage does not occur until the tenth day. At temperatures below 22° C. larvæ may take forty to sixty days to be transformed into pupæ, and these pupæ three to five days to become perfect insects. The ordinary length of the pupal stage is thirty to fifty hours. Larvæ do not perish at a temperature in the neighborhood of zero, but under these conditions they grow very slowly. Sea water is fatal to the larvæ of the *Stegomyia*, but in a mixture containing one-fifth sea water and four-fifths fresh water they develop, attaining the pupal stage on the eleventh day and the perfect insect stage on the thirteenth day. In brackish water, containing one-third sea water, they die in a few hours. Water containing one one-thousandth of its weight of soap kills the larvæ in five minutes. In solutions containing one ten-thousandths they do not develop. In solutions containing one two-hundred-thousandths they developed normally.

ADULT CONDITIONS.

Blood seems to be necessary to enable the female *Stegomyia* to lay. Human blood appears to be particularly grateful to her. In the early days of her existence she bites at any time. The female *Stegomyia* prefers to bite by night rather than by day. She may, therefore, be considered as a night mosquito.

LONGEVITY OF STEGOMYIA.

While the *Stegomyia* is very easily reared under proper conditions of temperature and moisture, it dies rapidly when placed in dry air and without blood as food. In captivity they attain the age of 2 months with comparative ease, but beginning from the fortieth day mortality among them becomes large, being greater among the males than among females. In the laboratory females have attained the age of 89, 90, 93, 97, 105, and 106 days. It did not seem possible to preserve males more than fifty days. In the free state the insect can not live so long, much of its vigor being lost within a short time after its evolution and its resistance is much diminished by danger and destruction of its scales. High temperatures from 36° to 39° are unfavorable to the life of a mosquito.

RACIAL PREFERENCES OF THE STEGOMYIA.

The *Stegomyia* will bite individuals of any race, but manifests in Brazil a preference for the white over the Indian, and the Indian over the negro. She manifests considerable repugnance to the negro, and bites only after quite prolonged contact. Among the white races she attacks by preference individuals with a thin skin and a fresh color.

CLIMATIC CONDITIONS FAVORABLE TO THE STEGOMYIA.

Every warm and moist climate whose temperature at certain seasons varies between 25° and 30° C. is peculiarly suited to it. Between 22° and 25° C. it multiplies, but more feebly. Average night temperatures below 22° C. are accompanied by a rapid disappearance of the species. The *Stegomyia* resists sudden changes of temperature badly.

INFLUENCE OF ALTITUDE.

In the vicinity of Rio de Janeiro the *Stegomyia* is seldom encountered at an altitude of more than 400 meters. At Petropolis, at an altitude of 800 meters, it is not found naturally and perishes when introduced. It appears, however, that this is not due to the altitude itself, but to the lowered nightly average of temperature.

RELATION OF OTHER MOSQUITOES TO YELLOW FEVER.

The commission concludes that no other mosquito found at Rio Janeiro, or in the vicinity, has any relation to the transmission of yellow fever. The commission draws the following deductions in regard to the transmission of yellow fever as a result of their observations: First, that yellow fever is not transmitted in nature either by direct contact with the patient or by contact with personal effects, or by his excretions. Second, that the transmission is effected by the biting of mosquitoes, and that the only dangerous species, at least in the region in which our researches have been conducted, is the *Stegomyia fasciata*. Third, that this transmission never takes place during the day while the sun is above the horizon.

In regard to protection against the infection of yellow fever, the commission deduces that "The introduction of merchandise is unattended with danger at any time."

In regard to arrivals from a territory infected with yellow fever at a port or place where the disease does not prevail, the commission deduces that "it is perfectly useless to inflict a quarantine if *Stegomyia* do not exist in the country at the time of arrival, since transmission can only be effected by this intermediary."

MEASURES LOOKING TO THE DESTRUCTION OF STEGOMYIA.

The observations of the commission present no points of particular interest for us in the United States. It is gratifying to find, however, that they have arrived at practically the same conclusions as have been arrived at as the result of experiment and observations in the United States.

The general conclusions of the commission may be summed up as follows:

1. The serum of a patient on the third day of the disease is virulent.
2. On the fourth day of the disease yellow-fever blood no longer contains any virus, even when the fever is high.
3. One-tenth of a cubic centimeter of virulent serum injected under the skin is sufficient to cause yellow fever.
4. The virus of yellow fever rubbed upon a blister on the skin, made by removing the epidermis, does not give the disease.
5. In the serum of the patient the virus of yellow fever passes through a filter—Chamberland "F"—without dilution.
6. Under the same conditions it does not appear to pass through Filter B.
7. Virulent serum preserved exposed to the air at a temperature of 24° to 30° is inactive at the end of forty-eight hours.
8. In defibrinated blood, preserved under liquid vaseline at a temperature of 24° to 30°, the microbe of yellow fever remains living for five days.
9. At the end of eight days defibrinated blood kept under the same conditions no longer contains active virus.
10. The virulent serum becomes harmless after heating for five minutes at 55°.
11. A preventive injection of serum heated for five minutes at 55° confers a relative immunity which, followed by inoculation with a very small quantity of virus, may become complete.
12. The injection of defibrinated blood kept in the laboratory under liquid vaseline for eight days at least confers a relative immunity.
13. The serum of a convalescent is endowed with clearly preventive properties.
14. The immunity conferred by the serum of the convalescent is still in evidence at the end of twenty-six days.
15. The serum of a convalescent appears to have therapeutic properties.
16. As has been proved by Reed, Carroll, and Agramonte, yellow fever is produced by the bite of the *Stegomyia fasciata*.
17. To be able to produce the disease in man, this mosquito must be previously infected by absorbing the blood of a patient stricken with yellow fever during the first three days of the disease.

18. The infected mosquito is only dangerous after an interval of twelve days from the time when it has ingested virulent blood.

19. The bite of two infected mosquitoes may cause a serious illness.

20. The mosquito appears to be more dangerous in proportion that her bite is delayed after the time when it has become infected.

21. The bite of infected mosquitoes does not invariably give yellow fever.

22. When the bite of infected mosquitoes has been without effect, there is no immunity conferred against the injection of virulent serum.

23. In the neighborhood of Rio de Janeiro, as in Cuba, no other mosquito than the *Stegomyia fasciata* is concerned in the transmission of yellow fever.

24. Contact with a patient, his personal effects, or his excretions is incapable of producing yellow fever.

25. Outside of the bite of the infected *Stegomyia*, the only means known of producing the disease is the injection into the tissues of a susceptible individual of blood from a patient collected in the first three days of the disease.

26. Yellow fever can only assume a contagious character in regions where the *Stegomyia fasciata* prevail.

27. The prophylaxis of yellow fever rests entirely upon measures taken to prevent the *Stegomyia fasciata* from biting the individual sick and then a healthy individual.

28. It must be borne in mind that the period of incubation of yellow fever may be prolonged up to thirteen days.

29. The *Stegomyia fasciata* is frequently infected by molds, yeasts, and by sporozoa. No parasite of this species recognized up to this time has any causal relation to yellow fever.

30. Neither in the mosquito nor in the blood have we succeeded up to this time in discovering the causal agent of yellow fever.

SANITATION OF RAILWAY COACHES AND PULLMAN CARS.

DISPOSAL AND HANDLING OF SOILED LINEN ON SLEEPING CARS.

Mr. M. Main, district agent for the Pullman Palace Car Company, having submitted, under date of February 26, 1904, a telegram from Mr. James Martin, of Philadelphia, Pa., requesting that suggestions be made by the Surgeon-General in regard to the laundering and handling of linen in storerooms and in cars, the following memorandum was submitted to the Surgeon-General, and forwarded to Mr. Main:

Observation on prolonged trips in Pullman cars has shown that the bed linen used overnight is gathered by the porter in the morning and is simply rolled up and thrown into a locker or closet at one end of the car, and that in the process of thus gathering it up it is more or less violently shaken. It is suggested that this be avoided and that each sleeping car be provided with strong canvas or, preferably, waterproof bags, of sufficient size to hold each a full complement of bed linen from all the berths in the car, and that the porters be instructed to place the used linen into these bags with as little shaking as possible, carrying the bags around the car with them in unmaking the beds in the morning.

The bags when full are then to be tightly closed with a draw string or other suitable fastening and the full bags stored in a special locker until the end of the trip or until put off at a division headquarters.

It would be an advantage, of course, if the bags containing the soiled linen could be passed through an efficient steam apparatus, using steam under pressure, before being sent to the laundry.

Another point which seems worthy of consideration is that the woolen blankets of Pullman cars should be provided with slip covers of cotton, linen, or other washable material. It is needless to say that the blankets are a source of danger for the reason that, being woolen and usually of dark color, they are not frequently washed or disinfected.

To carry out the plan of the slip covers, the method practiced in Germany of using elderdown quilts upon beds is suggested. These quilts, from their extreme lightness and the nature of their covering, usually silk, are, while very warm, exceedingly difficult to keep upon the bed, having a tendency to slip off during the night. This is guarded against by having the sheets for winter use of extra large size and provided upon one long edge with buttons and upon the other long edge a corresponding set of buttonholes. When the bed is made up for the night the upper sheet is simply folded upward and inward and buttoned in the middle over the elderdown quilt, thus inclosing the quilt in a bag, as it were, the lower end of which bag is tucked under the mattress and keeps the quilt in place, both laterally and longitudinally.

The plan is very simple and is thought worthy of suggestion to the Pullman Company, as it would keep the blankets from being soiled and prevent contamination, and, in addition, insure a sense of security on the part of the traveling public.

REPORTS OF OFFICERS DETAILED TO REPRESENT THE SERVICE AT MEETINGS OF MEDICAL AND PUBLIC-HEALTH ASSOCIATIONS.

REPORT ON THE MEETING OF THE MOSQUITO-EXTERMINATING CONVENTION HELD IN NEW YORK, DECEMBER 16, 1903.

Passed Asst. Surg. (now Surg.) J. C. Perry reports as follows:

The convention was well attended. Two hundred persons, some of whom are of marked prominence in industrial occupations in and around New York, were present, and a number of short papers dealing with the question of mosquito extermination were read. Many of these recounted the valuable results that had already been obtained in New Jersey and on Long Island as a result of measures instituted for the extermination of these pests. It was shown that districts of considerable area, in which mosquitoes had previously been a source of great annoyance and thereby diminished to a marked extent the desirability of these locations for summer resorts, had practically been freed from these insects, not only to the comfort but to the health of the persons residing there.

Several papers dealt with the subject of draining or so ditching the salt marshes as to eliminate stagnant water and the marked results that had been obtained in exterminating the salt-marsh mosquito, *Culex sollicitans*. The papers showed conclusively that such measures could be instituted and that the problem could be solved without a great outlay of money, and it was suggested that by these means not only could the districts become rid of the mosquito pests, but the increase in the value of adjacent property would be so material and the amount of land reclaimed would be sufficient to justify any expense in this connection, and would be not only a benefit but a distinct financial advantage.

In addition to the simple problem of eliminating the ordinary *Culex* species of mosquitoes for the personal comfort of summer residents of these localities, several papers dealt with that of eliminating the *Anopheles* and thereby ridding certain districts of malarial fevers. Some important evidence was adduced relative to this subject showing results that had been accomplished by draining, filling in, general policing of grounds, and the use of oil as a temporary expedient in destroying the larval forms of these insects.

The representatives of the Public Health and Marine-Hospital Service took part in the discussion and called attention to two types of mosquitoes, *Anopheles* and the *Stegomyia*, as of special importance to sanitarians. They stated in a general way what was being done in ports infected with yellow fever in order to eliminate the danger of bringing infected mosquitoes from those ports to places in the United States, such action being taken to shorten and simplify quarantine measures that might pertain to vessels. The principal disinfectants

or insecticides for the purpose of destroying mosquitoes, and the best methods of using the same, were fully considered and such remarks met with cordial reception.

The consensus of opinion was that the good work of destroying mosquitoes and reclaiming swamp lands should continue, and steps were taken to effect permanent organization for the purpose of stimulating this work in different localities and for the education of the people themselves to the point of thoroughly appreciating the advantages to be derived from cooperation in this important matter. It further appeared, as a result of the work already accomplished, that the measures instituted for the extermination of mosquitoes should be permanent ones; and that oil, as a temporary expedient, was advantageous, but was expensive and should only be used to afford temporary protection, instituting at the same time measures of a permanent nature to eliminate the breeding places of mosquitoes and thereby rendering the district free from these annoying insects for all time.

REPORT ON THE MEETING OF THE ASSOCIATION OF AMERICAN BACTERIOLOGISTS, HELD IN PHILADELPHIA, PA., DECEMBER 29, AND 30, 1903.

Passed Asst. Surg. M. J. Rosenau, director of the Hygienic Laboratory, who was detailed to represent the Service at this meeting, reports as follows:

A very interesting programme was presented on topics having particular interest to those who devote their time to the morphology, classification, and biology of bacteria and the protozoan group of organisms.

An article of particular interest to the Service was read by Dr. James Carroll, of the Army Medical Museum, entitled "The yeast cells found in *Stegomyia* and their relation to yellow fever." Doctor Carroll pointed out that the bodies described by working party No. 1, and believed by them to be phases of a protozoan organism, were yeast cells. In the discussion these views were in the main corroborated by Doctor Rosenau, as a result of the labors of working party No. 2 in Vera Cruz this summer.

Another interesting article was read by Dr. J. J. Kinyoun upon the subject of "Glycerin as a germicide with cell exudations and serum." Doctor Kinyoun's work on the germicidal value of glycerin in the main corroborated Rosenau's work along this line, especially as to the feeble effect which glycerin has upon micro-organisms. He also pointed out the overconfidence which obtained in the power of glycerin to purify vaccine virus before attention was called to this subject. He carried his work further in experimenting upon the power of glycerin plus the germicidal power of various serums upon the cell exudations as a result of which he obtained very interesting results.

Doctor Rosenau was elected vice-president of the society.

REPORT ON THE MEETING OF THE AMERICAN RÖNTGEN RAY SOCIETY AT PHILADELPHIA, PA., DECEMBER 9 AND 10, 1903.

Surgeon Irwin reports as follows:

The society met on the morning of December 9, at Houston Hall, University of Pennsylvania, the use of which had been tendered the society through the courtesy of the provost of the university. After the transaction of general business, the first paper on the programme was read by Dr. William S. Newcomet, of Philadelphia, the subject being "Pathologic changes in tissue under the influence of the X ray." This paper was of very great interest as showing the effect of the X ray on malignant and nonmalignant growths with microscopic examinations of growths both before and after the use of the X rays. It was brought out among other points that rapidly growing neoplasma are not as amenable to treatment as the slow growing ones. This paper was fully discussed by Doctor Burdick, of Chicago; Doctor Clark, of Olean, N. Y., and Doctor Hulst, of Grand Rapids, Mich.

The next paper was read by Dr. Charles L. Leonard, of Philadelphia, Pa., well known for his work in this line. The paper was entitled "The results of the Roentgen method in the diagnosis of renal calculus." This paper very clearly presented the advantage of this method of diagnosis and some beautiful

plates were shown. A point of very great interest to the observer was the very large proportion of calculi shown by this method of examination to be in the ureter instead of the kidney. In very many cases this would indicate that there was no necessity for operation. Doctor Bullitt, of Kentucky, opened the discussion, which was participated in by Doctor Hulst and closed by Doctor Leonard. He pointed out the fact that the method has acquired greater accuracy in many lines of diagnosis than had been obtained by other methods. He said that the diagnosis value of the X ray should not be lost sight of in the enthusiasm of cancer treatment, although this was a very valuable application. He said that the progress of medicine would be furthered and patients helped by the more general use of this method of diagnosing. He spoke particularly of the results he had obtained in examining over 300 patients for stone in the kidney. He had found stone in 89 cases. Twenty cases he had examined had been saved the necessity and danger of operation, because the X ray showed the stone was small enough to pass. This method he has proved has the advantages of being more accurate, of saving many patients from operation, and of making the operation less severe and dangerous as well as complete.

The next paper was "Two cases of severe X-ray necrosis, presenting some unusual features," by Dr. Clarence E. Skinner, of New Haven, Conn. This paper was quite elaborate and the reporter took very copious notes. However, the conclusions of Doctor Skinner are here given.

First. That a patient should not be given X-ray treatments at all frequently through a long period of time, no matter how well they seem to bear them at first.

Second. That it is advisable in many cases to remove tissue with the knife, which has been destroyed by X rays, and that galvanic electrical currents will be of great assistance in healing these sores after the gangrenous tissue is out of the way.

Third. As the skin of both of these patients was very much browned by the treatment, and yet they developed severe burns, that "tanning" does not constitute immunity from burns, as is frequently believed.

Fourth. That the physiological action of the X ray is not confined to destructive influences, but that it modifies the development of the cells, as indicated by the development of burns five or six months after the X-ray treatments had been suspended, and because "tanning" and other abnormal structural conditions appeared in the new skin which had formed many weeks after the treatments were stopped and which had not been subjected to the X rays at all.

Fifth. That every case of X-ray burn must be treated by itself. No one routine method of treatment will prove serviceable in all cases, and no condition exhibits so emphatically the truth of the old adage that "What is one man's meat is another man's poison."

A general discussion on cancer followed, in which it was the general opinion that the result of the treatment of cancerous growths by the X ray could not be stated. Certainly some cases have been reported as cured, even sarcomata, although there appears to be little hope from this last mentioned.

The association then adjourned until the afternoon session. The afternoon session began at half past 2 o'clock. It was expected that the proceedings would begin by the reading of a paper by Dr. William E. Sweet, of Philadelphia, on "The localization of foreign bodies by the Roentgen rays," but as Doctor Sweet was absent, Dr. Henry Hulst, of Michigan, read his paper on the "Skia-graphy of the chest," and presented some very excellent plates. This was followed by Dr. Mihran K. Kassabian, who is director of the Roentgen ray laboratory of the Philadelphia Hospital, with his paper on "How to obtain an instantaneous skiagraph of the thorax." He stated the time of exposure of the skiagrams of the lungs and heart has been reduced during the past few years from two to five minutes to as many seconds. This is possible owing to the improvement of the apparatus and skill from experience. A review was taken of all apparatus, indicating which appliance gave most satisfactory results in "skiagraphy." Stress was laid upon the fact that the larger induction coils give better results than smaller ones. He briefly dwelt upon the sensitive plates best adapted to be used. Doctor Kassabian predicted the production of the skiagrams so rapidly as to show the movement of the heart and lungs and other viscera in kinetographic flashing. This paper was discussed by Doctor Burlick, Mr. Ward, of London, and others.

The session was concluded by a paper by Dr. Henry E. Waite, of New York, "On the care of the static machine." The writer regrets that it is not possible to quote this article entire, inasmuch as nearly all marine hospitals are pro-

vided with static machines, and the results that are to be obtained from them depends very much on the care taken of them. Doctor Waite's article will clear up many points in the care of these machines that have hitherto been a puzzle to officers. It is recommended that a reprint of this paper be furnished to each hospital. The evening session was devoted to the hearing of the president's address, by Prof. Arthur W. Goodspeed, Ph. D. of the University of Pennsylvania; subject, "The trend of modern thought upon the subatomic structure of matter."

In concluding an account of the first day's proceedings the writer desires to express appreciation of the courtesy shown to him, as well as to the other delegates from the Government services, Capt. Deane C. Howard, Medical Department, U. S. Army, and Surgeon Stokes, U. S. Navy. They were presented to all the officers of the association, given prominent places for observing the proceedings, and in every way treated with the greatest kindness and consideration.

THURSDAY, DECEMBER 10.

The second and last day of the meeting began in the morning with a paper by Preston M. Hickey, M. D., of Detroit, the title of which was "The development of the skeleton, radiographically considered," and this was discussed by Doctor Girdwood, of Montreal. Then followed an article, "The effects of rays upon lower animal life," by Kennon Dunham, M. D., of Cincinnati. The next paper on the programme, "The stereoscope in radiography," was not read, owing to the absence of the author.

Then followed a most interesting paper by W. A. Price, of Cleveland, on "Technique for making good dental skiagraphs." This was, of course, of special interest for dentists and specialists in oral surgery. The afternoon session began with what might be considered the paper of the greatest interest of the session, judging not only from the subject but from the great interest shown in the discussion. This paper was prepared by Doctors Pancoast and Bartle, of Philadelphia, with Mr. Henry C. Welker. The title accounts in a way for the interest shown, "The therapeutic effects of the X rays, as shown from the results of treatment of one hundred cases." There were lantern photographs used to illustrate the value of the X ray in the treatment of disease. A general discussion on cancer followed, in which it was the general opinion of the physicians present that the X-ray treatment of cancerous growth was beneficial. Dr. Henry K. Pancoast demonstrated that the therapeutic effects of the X rays, as shown from the results of treatment in over 100 cases at the University Hospital, were instrumental in relieving the patients of pain, in many cases of completely curing them, and in some cases failing in ultimate effects.

"The medical world admits," said Doctor Pancoast, "that the X rays, as applied to the treatment of cancer, have curative powers. Cancer has also been cured by operation, and many physicians prefer this method than by the newer system." It was shown according to statistics that cancer is on the increase in the United States. The prevalent disease in this country and in Europe is lupus, a skin affection, with its tendency to disfigure the faces of patients. In many instances medical science can find no absolute cure for the disease. X rays have cured hundreds of patients, and it has been found that the ultra-violet light kills the germs, which are the nuclei for the growth of the disease. If the application of any remedy does not kill these germs, the patient continually suffers. It has been found that the X ray has effected complete cures, and by hundreds of physicians it has been looked upon as the El Dorado of the medical world as applied to the check and cure of cancer. Dr. George G. Hopkins, of Brooklyn, started the discussion on the topic, which was easily the paramount feature of the day. His earnest plea was that every effort should be made to perfect any and all means of checking the disfiguring disease. It was brought out in the discussion that "cancer studied in a large institution like a hospital shows results that might be improved under different conditions. Many of the cases are seen every day, and only during dispensary hours. Each case is a study by itself. In hospital statistics the X-ray room is the dumping ground for every kind of case, and as a rule they get the worst. In spite of these conditions there is 10 per cent of cures to record in a large hospital.

A paper on "A comparative study of fractures of the extremities" was read by Mr. Martin I. Willert, who is in charge of the X-ray laboratory of the German Hospital in Philadelphia. He said he was safe in asserting that precision and exactness of diagnosis are virtually impossible without the use of the X rays, and that without a complete and correct diagnosis the subsequent treat-

ment is largely a matter of chance. At the German Hospital an X-ray plate is made of every case of fracture coming to the hospital and filed for future reference.

A paper on "Developers" was next read by Dr. Gordon G. Burdick, of Chicago, and discussed by Doctor Kassabian, of Philadelphia, and others.

The closing session of this most interesting convention was held in the evening, beginning with a paper on "Accuracy in X-ray diagnosis," by Russell H. Boggs, M. D., of Pittsburg. He stated that on account of the greater part of every X ray worker's time having been taken up in the past by the treatment of light, many details in the picture work have been overlooked. Doctor Boggs reported 9 interesting cases which could not be diagnosed by any other means except by the X ray.

Then followed a paper by Doctor Pancoast, entitled "Exploding tubes." Some amusement was caused by the title of this paper, inasmuch as a tube containing a vacuum could not explode. The word "collapse" was suggested as the proper one.

The last paper was by Dr. John T. Pitkin, of Buffalo, "Dangers to the X-ray operator." Differing susceptibility of operators makes it difficult to give rules for self-protection in using the X ray. Various forms of gloves are shown, all of which are necessarily very clumsy. Most operators soon adopt methods for their protection. Care as to exposure and a properly prepared cloth to throw over the hands when using the tube are points of importance. One very important point, which seemed to be generally held, may be mentioned in concluding this report: Referring to the treatment of growths, malignant and non-malignant, it was stated that where operable they should be treated with the knife, and then, if recurrent, to be exposed to the action of the X rays.

MEETING OF THE NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS.

Passed Asst. Surg. M. J. Rosenau reports that he attended the meeting on the evening of June 6.

The principal business before the meeting was to complete the organization. A constitution and by-laws were adopted, which had been prepared by the committee appointed March 28 at Philadelphia to organize the society.

Dr. E. L. Trudeau, of Saranac Lake, N. Y., was elected president.

The following directors were chosen:

Massachusetts, Bowditch and Otis; Connecticut, Foster; New York, Biggs, Trudeau, Devine, and Knopf; Pennsylvania, Lawrence Flick, Mazyck P. Ravenel, Howard S. Anders, and Leonard Pearson; New Jersey, Hoffman; Maryland, W. H. Welch, William Osler, Jacobs, and Fulton; District of Columbia, Sternberg; North Carolina, Minor; Colorado, Soley; Illinois, Klebs and Babcock; Minnesota, Bracken; Missouri, Porter; Indiana, Hurty; Michigan, Vaughan; Ohio, Probst; California, Briggs; Texas, M. M. Smith; Public Health and Marine Hospital Service, Surgeon-General Wyman, and United States Army, Major Bushnell, of Fort Bayard.

A general discussion was had as to the best means of preventing tuberculosis, upon the scope of the society, and the direction in which its efforts should be directed.

MEETING OF THE AMERICAN MEDICAL ASSOCIATION.

ADDRESS BY SURGEON-GENERAL WYMAN.

At the meeting of the American Medical Association, held at Atlantic City, N. J., June 7 to 10, 1904, Surgeon-General Wyman presented the following paper in reply to the question for discussion, "What can the medical profession do for the Public Health and Marine-Hospital Service?" The paper made a profound impression.

WHAT THE MEDICAL PROFESSION CAN DO FOR THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE

It is a great privilege, in response to the invitation of our president and in the presence of a great audience such as always characterizes our general

meetings, to say a word for the United States Public Health and Marine-Hospital Service, a service that had its origin in 1798 and has slowly but steadily grown, as grows the tree, by putting out from time to time twigs of new duties, which have developed into strong branches of public service, until it has reached its present sturdy growth, secure from any casual uprooting and still growing. Its 300 or more medical officers may be found in every prominent port on the seacoast from Maine to Alaska and on our Great Lakes and rivers; on the Isthmus of Panama, in Porto Rico, Hawaii, and the Philippines; in Canada, British Columbia, Japan, China, India, and in Europe.

In the United States you will find them administering 22 Government hospitals and 125 other relief stations, extending surgical and medical relief annually to 58,000 seamen of the merchant marine. You will find them administering 37 quarantine stations, inspecting and disinfecting ships, and isolating contagion approaching from foreign shores. You will find them making visual examinations of all our pilots, rejecting 4 per cent annually for color blindness, examining physically the crews of life-saving stations that physical defects may not mar the glorious achievements of that great service. At every port or place on the seacoast and on the Canadian and Mexican borders, where alien immigration seeks entrance, you will find these officers examining each immigrant and rejecting those that are afflicted with loathsome or contagious disease or whose physical condition makes them liable to become a public charge. In times of epidemic you will find them managing with military precision detention camps, acting as experts in the detection of the disease, and directing with coolness and judgment the necessary measures to prevent its spread. At this very time you may find them in certain portions of our country liable to the invasion of yellow fever waging a prophylactic campaign by the systematic destruction of the breeding places of the mosquitoes which convey this disease, and organizing in cities and villages local working parties to continue the work, with free distribution of literature showing its necessity and detailing its method.

In contrast to this field activity you will find them in the Service laboratory established in Washington by act of Congress, delving into the cause of disease and in other branches of scientific research, or receiving instruction there in the latest scientific methods of diagnosis, to be applied later in their expert work. Thence they go by request to arbitrate local disputes as to the existence or nonexistence of bubonic plague, yellow fever, smallpox, or cerebrospinal meningitis; to advise with regard to the source of typhoid infection, to address societies on the prevention and suppression of disease, or to investigate some new or ill-understood malady that threatens the material prosperity as well as the health of communities.

Their laboratory work includes also the test of purity of vaccine virus and antitoxic serums, on which, and on their personal inspections of the establishments producing them, depends a granting of the license required by law.

In Canada and British Columbia they are stationed to prevent the side entrance into the United States of aliens who would be rejected for physical causes at our own ports. In Japan and China they are inspecting ships, passengers, and cargoes bound for the Pacific coast, and are pointing out to the steamship companies such immigrants as they know will be refused entrance into the United States under the immigration law. In Calcutta and Bombay and in Naples they are exercising like supervision. All these officers forwarding periodic reports giving information concerning the sanitary conditions and epidemic diseases prevailing in these respective countries.

They are administering national quarantine in the Philippine Islands, in Hawaii, and in Porto Rico. You will find them in the principal fruit ports of Central America, examining and certifying fruit vessels bound for our southern coasts, that they may not be detained on arrival with their perishable cargoes. You will find them in Cuba, stationed in the offices of the consuls at the several ports, still on guard, notwithstanding the sanitary regeneration of that island. You will find them in the ports of Mexico, giving bills of health to all vessels leaving for the United States, causing a waiver of detention on arrival and thus expediting commerce. You will find them on the Isthmus, in charge of the quarantine at Panama, protecting that city and the Canal Zone from the invasion of yellow fever from Ecuador and of the bubonic plague from Peru or Chile; and in the ports of Ecuador and Peru, carefully inspecting or disinfecting vessels bound for the Isthmus as well as those bound for the United States. You will find them also in Rio de Janeiro and La Guaira, Venezuela, for the exercise of the same functions.

requiring a sufficiently broad education, in addition to professional excellence, of the graduates from whom we recruit our ranks; and by sympathetic support in our aspirations, which are the same as those of the profession itself.

REPORT OF ASST. SURG. GEN. G. T. VAUGHAN.

Asst. Surg. Gen. George T. Vaughan, who represented the Service at the above meeting, reports as follows:

June 8.—He reached Atlantic City and registered for attendance on the section of general surgery and anatomy. In the evening he attended the general meeting, when the oration on surgery was delivered by Dr. W. J. Mayo, after which came a symposium on the "Mutual relations and duties of the Government medical services and the profession." The symposium was opened by Dr. Victor C. Vaughan in an address entitled "What can the Medical Departments of the Army, of the Navy, and of the Public Health and Marine-Hospital Service do for medical science?" and was responded to as follows: "What can the medical profession do for the Army?" by Dr. William C. Borden, major and surgeon, U. S. Army; "What can the medical profession do for the Navy?" by Dr. C. F. Stokes, surgeon, U. S. Navy; and "What can the medical profession do for the Public Health and Marine-Hospital Service?" by Surg. Gen. Walter Wyman.

June 9.—He attended the section on surgery and anatomy and heard the following papers read and discussed: "The anatomy of inguinal hernia, Andrew's operation for radical cure," by Dr. D. N. Elsendrath, and "Three years' experience with the autoplasmic suture for hernia," by Dr. L. L. McArthur. These two papers were discussed by Doctors Coley, Marcy, Bloodgood, De Garmo, Bevan, Stokes, Walker, Leonard, and Holmes. "Surgery of the trifacial nerve and its ganglia," by Dr. J. B. Murphy; "Intracranial neurectomy for trigeminal neuralgia, cases and comments," by Dr. H. M. Sherman, and "Summary of the final results of four cases of division of the sensory root for tic douloureux," by Dr. C. H. Frazier. These papers were discussed by Doctors Mills, Spiller, Weir, Horsley, and Cushing.

"Laminectomy, a further contribution," by Dr. J. C. Munro; discussed by Doctors Lund and Cushing. "The treatment of cold abscesses and sinuses in tuberculous diseases of bone," by Dr. V. P. Gibney; no discussion. "Old unreduced dislocations," by Dr. De F. Willard; discussed by Doctors Jonas, Thompson, Bevan, Blake, Vaughan, and Lord. "Conservative perineal prostatectomy, report of fifty cases," by Dr. H. H. Young; "Prostatic obstruction," by Dr. P. Syms; "Prostatectomy in general, especially by the perineal route," by Dr. G. Goodfellow, and "Is it wise to try to make any one operative method apply to all prostatectomies?" by Dr. E. Fuller. These papers were discussed by Doctors Horwitz, Dawbarn, Munro, Tinker, McLaren, and Elsendrath.

The tendency of the papers and the discussion was to minimize to an unsafe degree the difficulties and the dangers of the operation of prostatectomy.

"Kidney stone, diagnosis and treatment," by Dr. A. D. Bevan; discussed by Doctors Leonard, Bullitt, Blake, Deaver, Young, Winslow, and Thompson.

In the evening he attended the general meeting, when the oration on State medicine was delivered by Dr. Herman M. Biggs, and after that a symposium on the departments of scientific research of the Government, in which the first paper was entitled "The Bureau of Animal Industry, its service to medical science," by Dr. W. H. Welch; second, "The service of the medical profession to the Bureau of Animal Industry," by Dr. D. E. Salmon; third, "The bureau of chemistry and medical science," by Dr. W. H. Wiley, and, fourth, "The Hygienic Laboratory of the Public Health and Marine-Hospital Service," by Dr. H. D. Geddings.

June 10.—The first paper was "The treatment of fractures of the patella by lateral sutures," by Dr. J. A. Blake; discussed by Doctors Gibbon, Vaughan, Blinnie, Rodman, Thenau, Elsendrath, Bullitt, and Lemon. "The surgical treatment of certain cases of arthritis deformans," by Dr. M. B. Tinker; discussed by Doctors Vaughan and Sherman. "Impacted fractures of the neck of the femur," by Dr. Le M. Wills; discussed by Doctors Sherman, Thompson, Rodman, Crane, Elsendrath, Bullitt, and Fenner. "Fat embolism of lung following fractures, with report of two cases," by Dr. F. G. Connell. At the conclusion of this paper the section adjourned, about 1 p. m., sine die, and at 2.30 he returned to Washington.

REPORT OF ASST. SURG. GEN. H. D. GEDDINGS.

Doctor Geddings reports that upon registering he designated the section on hygiene and sanitary science as the one in which he was particularly interested.

The meetings of this section were held at the Garden Hotel, and he attended the two daily sessions.

The address of the president, Dr. Gardner T. Swarts, was brief but interesting, and served more as a fitting introduction to the general labors of the section than as a dissertation on any one subject.

The meetings were, in general, well attended, and the papers presented were usually discussed fully and freely, but the first day was entirely devoted to a consideration on the dangers and prophylaxis of the venereal diseases, and the opinion is expressed that the papers and the discussions thereon were academic rather than practical in character, and dealt largely with statistics and statements of an *ex parte* character.

A paper on "Dairy hygiene, with special reference to tuberculosis," by Dr. Richard Cole Newton, of Montclair, N. J., was interesting and of value, as showing the extensive prevalence of tuberculosis in dairy herds, especially of the finer milk and butter producing grades.

"The status of antituberculosis work in the United States" was presented by Dr. S. A. Knopf, of New York, and was an able presentation of the subject.

"The study of the economic course of consumption in wage-earners," by Dr. Marshall Langton Price, of Baltimore, was a scholarly and striking presentation of the economic cost of tuberculosis in the working classes.

Dr. John S. Fulton, of Baltimore, Md., presented a paper on the question, "Is pneumonia increasing?" which he handled from the statistical point of view in a manner calculated to show that the alarmist statements to this effect appearing in the daily and medical press were largely due to a disregard of some cardinal principles of statistical deduction.

Other papers were read, but presented nothing of particular value.

Doctor Geddings presented a paper in one of the general evening meetings of the association upon "Research work in the hygienic laboratory of the Service," which, it is believed, presented facts not before collated.

Upon the adjournment of the association he returned to Washington, in compliance with his orders.

Doctor Geddings further reports that he had the honor to read the following address at the third general symposium of the association, which was devoted to the consideration of the scientific work of the various departments of the United States Government in their relation to the public health.

RESEARCH WORK IN THE HYGIENIC LABORATORY OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE.

From small beginnings, research work in the laboratory of the Service has grown to important proportions. It is believed that a short sketch of the growth of the laboratory would serve to show better than extended remarks the process of development through which it has passed.

The laboratory was inaugurated as a laboratory of pathology and bacteriology, principally the latter, at the marine hospital of the port of New York, situated at Stapleton, Staten Island, in 1887. For several years it was in charge of one officer, who devoted such time to it only as could be spared from his professional duties in the hospital.

In 1891, the Marine-Hospital Service having been provided with an office building for its exclusive use, the laboratory was removed from New York to Washington, and from 1891 to March, 1904, occupied one floor of the office building of the Service, undergoing meanwhile a steady development.

At an early period after this removal the advantage was appreciated of constituting in the laboratory a school of instruction for officers whose bent of mind was toward scientific research, and from time to time such officers were assigned for duty in the laboratory as assistants and received a more or less extended course of instruction and training. Such courses were frequently

supplanted by details abroad, with the opportunity of visiting and studying at laboratories in Berlin, Paris, and Vienna.

Much work has been accomplished during these years bearing directly on the needs of the Service. The disinfecting methods of the Service as applied in its quarantine and epidemic work were investigated and brought to a scientific basis, both as to agents, the method of their application, and the time necessary for their employment under practical conditions. The result of this work was the elaboration of a system of disinfecting apparatus, which is in use to-day, and which, with the passing of time, has been mechanically improved until it now stands unrivaled.

Departing from the routine use of sulphur dioxide, steam, and solutions of bichloride of mercury and carbolic acid, it is believed that this laboratory was the first to exploit that extensively employed agent formaldehyde in the combating of infections. The first diphtheria antitoxin manufactured in the United States was the output of the Hygienic Laboratory of the Service. The first authoritative publication on the treatment of diphtheria by antitoxin was issued by the Service, and was the direct outcome of personal instruction afforded an officer of the Service by Behring and Roux, who separately announced their discovery at the Budapest meeting of the International Medical Congress.

Steadily advancing under the enlightened and fostering care of the Surgeon-General, the results of other research were brought from abroad and practically applied in the United States. Plague was studied in the laboratory of the Pasteur Institute by an officer of the Service, and the methods of preparing a curative serum and a prophylactic for the prevention of the spread of the disease were exploited in the laboratory.

An effort was also made, though not crowned with success, to apply the serum of vaccinated calves to the treatment of smallpox. The time afforded was too short and the quantity of material on hand too limited to do more than break ground in this important direction.

From time to time bulletins embodying the results of laboratory work have been published. These bulletins now number 18, with others in course of preparation and in the hands of the printer. Among other subjects investigated thoroughly and made public in this method may be mentioned bulletins on the "Presence of tetanus in commercial gelatin," "Report on the prevalence and geographical distribution of hook-worm disease," "A study of the impurities of commercial vaccine virus," "An experimental investigation of *Trypanosoma lewisi*," "A statistical study of the intestinal parasites of 500 patients at the United States Government Hospital for the Insane," "A study on the spotted fever (tick fever) of the Rocky Mountains," and others.

It is only proper to say that no subject has been of more importance to the United States and its dependencies beyond the sea than that of hook-worm disease, which, from the bodily weakness and mental depression which it causes among those infected by it, inflicts an economic loss in certain sections attained by no other disease.

The "spotted fever" of the Rocky Mountains is a subject of vast economic importance to one of the most fertile and most promising sections of our western country, the disease being attended with great fatality, and, recurring every spring, a panic almost has at times prevailed, which threatened to result in the abandonment of this most fruitful section and the destruction of rapidly increasing agricultural industry.

From time to time the attention of Congress was invited to the necessity for more adequate quarters for the growing operations of the laboratory, and in March, 1901, this persistence was rewarded by the passage of a section in the bill making appropriations for the sundry civil expenses of the Government giving \$35,000 for the erection of the necessary buildings and directing the cession by the Secretary of the Navy of 5 acres of the old Naval Observatory site for laboratory purposes.

Some time was spent in the preparation of plans, and in the meantime an act was approved, July 1, 1902, which materially altered the plan and scope of the Service, and at the same time changed its name from the "Marine-Hospital Service" to the "Public Health and Marine-Hospital Service."

In addition to other important features affecting the public health and the relation of the Service thereto, the scope of the laboratory was widely extended. An advisory board was constituted, consisting of officers appointed from the medical corps of the Army and Navy and of a scientist from the Department of Agriculture, and, in addition, 5 appointees from civil life not connected with the service of the Government, whom, it was provided, should be persons skilled in

laboratory work in relation to the public health. The advisory board consists of Prof. William H. Welch, Prof. Simon Flexner, Professor Sedgwick, Prof. Victor C. Vaughan, Prof. F. F. Westbrook, Maj. Walter D. McCaw, U. S. Army, Surg. J. F. Urie, U. S. Navy, and Doctor Salmon, United States Department of Agriculture.

From a simple laboratory of pathology and bacteriology, the laboratory was increased by this act to one embracing three additional divisions, namely, those of chemistry, medical zoology, and pharmacology.

The building has recently been completed, and the work of these new divisions is now well under way, the division of zoology continuing its investigation into the parasitic disease of man, and the division of pharmacology, in addition to the scientific investigations of the highest import, being engaged in an examination of drugs and medical supplies to determine their potency and pharmacopoeial purity.

In addition, an act also passed July 1, 1902, and effective six months after the date of its passage, provided for the licensing of all establishments engaged in interstate traffic, or in traffic in the District of Columbia, in viruses, serums, toxins, antitoxins, and analogous products. This law provides that establishments engaged in the manufacture of these products shall be licensed by the Secretary of the Treasury, and also, preliminary to the issuance of such license, that the establishment shall be inspected by officers detailed for the purpose. It further provides that specimens and samples of these products may be purchased in open market and examined in the laboratory for purity and potency, and that faulty methods of construction, faulty products, false labelling, etc., are punishable by fine and also by suspension or revocation of the license.

This work has been steadily progressing in a quiet and unostentatious way, and the records of the laboratory show a most remarkable improvement in the quality of these products, especially vaccine virus, whereas before the passage of this law and of the regulations framed thereunder it was not an uncommon thing to find vaccine which contained hundreds of micro-organisms. In a point of vaccine virus it is not an uncommon thing now to find most of it containing less than 100 per same quantity, with a notable absence of pathogenic and pyogenic organisms.

In accordance with the requests of manufacturers and with the recommendations passed by the American Medical Association and the American Pharmaceutical Association, the preparation of a standard antitoxic unit for use in the United States has been inaugurated in the laboratory, and it is hoped that within a few months it will be ready for issuance and use.

Aid has been extended to State and local health officers in many directions. The contamination of city and town water supplies by typhoid has been extensively investigated when requested, and recommendations have been made as to their betterment.

Cases of suspected plague occurring in various parts of the country, and arriving at the quarantine stations on our shores, have from time to time been investigated by the laboratory, and have furnished an additional safeguard against the invasion of this disease.

Investigations as to the etiology of yellow fever, and especially as to the relation of the mosquito to the transmission of yellow fever, have formed the subject of investigation in epidemic habitats of the disease by members of the laboratory force and under the auspices of the Yellow Fever Institute of the Service. These investigations have served to amply confirm the original investigations of Reed as to the rôle played by the mosquito in the conveyance of the disease, and are at this time in striking accord with the recently published report of a commission of the Pasteur Institute, of Paris, France, on the same subject.

The dissemination of malarial fevers by mosquitoes has also been under investigation and in a bulletin now ready for the press will be found an interesting memoir on the toxicity of filtered malarial blood.

It is difficult within the limits of an address of this sort to state what has been accomplished by the laboratory of the Service, so wide and so varied having been its operations, and it is even more difficult to predict limits as to its future usefulness. A progressive spirit actuates the director, Dr. M. J. Rosenau, who is both scientific and enthusiastic, and this enthusiasm he imparts to his assistants, and in a quiet way, without ostentation, almost every important question relating to the public health is the subject of investigation.

The subject of the sanitation of railway coaches and sleeping cars is receiving careful attention, and it is believed that this vital question will be considerably cleared up by investigations which have been continued from time to time over a period of several years.

The Service is justly proud of its laboratory, and feels that, while its announcements have been comparatively few, its achievements have been of value and promise an untold amount of good for the future.

REPORT OF SURG. P. M. CARRINGTON.

Surg. P. M. Carrington reports as follows:

Arriving in Atlantic City on the evening of June 5, he received telegraphic instructions from the Surgeon-General to represent him in the house of delegates until his arrival.

On Monday and Tuesday, the 6th and 7th, he therefore attended the meetings of the house, reporting verbally to the Surgeon-General upon his arrival. He registered in the section on hygiene and sanitary science and attended its sessions, which were well attended, and offered an interesting programme.

Papers by Drs. S. A. Knopf, of New York, Richard Cole Newton, of New Jersey, and Arnold C. Klebs, of Chicago, were of especial interest as dealing with tuberculosis and allied questions.

Upon adjournment of the association he returned to his station, reporting at the Bureau en route as directed, and resuming command of the sanatorium at Fort Stanton, N. Mex., on June 15.

Surgeon Carrington further reports that, in addition to attending the sessions of the section and the general meetings, he had pleasant and instructive conferences with a number of delegates on subjects immediately connected with the management of sanatoria. In the general meetings the symposium on the Government services was most interesting and profitable; addresses by Dr. Victor C. Vaughan, of Ann Arbor, Surgeons Stokes and Borden, of the Navy and Army, and Surgeon-General Walter Wyman were well received and elicited much applause and favorable comment.

REPORT OF PASSED ASST. SURG. M. J. ROSENAU.

Passed Asst. Surg. M. J. Rosenau reports that he attended the meeting of the American Medical Association at Atlantic City June 6 to 9, paying particular attention to the proceedings in the section of pathology and physiology.

The section meeting was one of the best the association ever held, and many valuable papers were read on the subjects in question.

The paper which perhaps elicited most attention was one by Dr. Victor C. Vaughan, of Ann Arbor, Mich., entitled "Further studies on bacterial intercellular toxins."

Vaughan uses massive growths of bacteria, especially colon bacilli, to study the cellular toxins, because the bacterial cell may be obtained practically free from all extraneous matter, which is scarcely possible with multicellular plants or animals. Vaughan obtained several pounds of colon bacilli—typhoid, anthrax, etc.—and considers that he has, instead of a great mass of bacterial cells, a definite chemical compound from which he separates out, by the use of acids, alkalies, and other substances, particularly sodium alcoholate, various substances, some of which are toxic, some bacteriolytic, etc. In this cell mass he has found substances belonging to the nucleic group which, according to Ehrlich, is the administrative group; also fats, carbohydrates, amido compounds, etc.

Based on this work, Vaughan has enunciated a theory of immunity, considering that the toxic group combines with a particular chemie group in the protoplasm of the cell, which may destroy this group but not the whole cell. In this way we have a distinction between a poison and a toxin. All toxins are poisons, according to his definition, but all poisons are not necessarily toxins; and it is only the substance which is able to destroy one group of the cell composition, leaving the rest of the cell intact to regenerate this group, in that way producing an excess of this particular group and thereby immunity.

We see here really Ehrlich's theory in different terms. Instead of considering a molecule with side chains and a protoplasmic substance with receptors, Vaughan calls them chemical groups.

Vaughan's thoughts are clear and definite, and are very helpful in formulating ideas upon immunity, placing them upon very material chemical bases.

MEETING OF THE MISSISSIPPI STATE MEDICAL ASSOCIATION, APRIL 20-22, 1904.

Dr. Charles Wardell Stiles, chief of division of zoology, Hygienic Laboratory, reports through the director Hygienic Laboratory, as follows:

Nearly his entire time on April 21 was occupied in arranging for a patient and finding fresh material for microscopic demonstration before the association, hence he missed most of the papers delivered the second day of the meeting. In the evening of the second day he gave an "Address on hookworm disease or uncinariasis, with special reference to its eradication," illustrated by lantern slides.

During the third day of the meetings his time was almost entirely occupied in exhibiting a case of hookworm disease and in a microscopic demonstration of the parasite and its eggs, with method of preparing the specimens for diagnosis, to the members of the association, who left the general meeting two or three at a time.

He further reports that during the first year of reorganization of the State association 46 counties have been organized, with a membership of 530, representing a net gain of 378 members, which is the largest gain in the history of the society.

Dr. H. M. Folkes, of Biloxi, presented a paper on "The prophylaxis of enteric fever," of which the following is an abstract:

Doctor Folkes called attention to rapid and widespread dissemination of typhoid fever, especially since Spanish-American war. He called attention to what are known as typhoid centers, citing as such Philadelphia and Pittsburg, and pointed out how such places are sources of the greatest danger to the entire country. Dwelling upon the known avenues of infection, he discussed the strong probability of an entrance through respiratory channels. Great stress was laid upon diagnosis, deeming it best to err on the side of safety rather than have a hair-splitting diagnosis permit infection of an entire family or community by an unrecognized case of typhoid masquerading with a multiplicity of misleading names. In the matter of infection, he considered erroneous diagnosis and failure to disinfect excretions as being most prolific causes of the spread of the disease.

Citing recent epidemic at Butler, Pa., and the fact that 10 per cent of the nurses engaged at that point were infected with the disease, he claimed that pure carelessness is at the bottom of much spreading of typhoid fever.

As prophylactic measures in combating typhoid, he advocated use of screened windows and doors, or mosquito and fly bars, removal of all drapery and floor coverings, together with unnecessary furniture, burning of all unused food and medicine, boiling of all bed linen and wearing apparel used by or on the patient, and where this is not practicable, its immersion in acid 1:500 mercuric chloride solution, the same course to be pursued with all utensils utilized by patient, putting all urine, feces, and sputum in same acid solution of mercury, and insisting that nurses disinfect their hands after each and every contact with patient, and that they neither sleep nor eat in room with patient. He laid great stress upon disinfection of both urine and feces for at least six weeks after recovery. He closed his paper by stating that in diagnosis and disinfection are the only sure methods of preventing spread of typhoid fever.

A paper by Dr. E. C. Coleman, of Kosciusko, entitled "Summer diarrhea of children and its treatment," resulted in considerable discussion on the subject of diagnosis, treatment, and prophylactic foods.

Dr. H. A. Gantt, of Jackson, in a paper entitled "A consideration of scarlet fever," considered that the quarantine regulations requiring one month's absence from school were too severe, and expressed the opinion that ten or fourteen days were sufficient.

In his presidential address, Dr. C. D. Mitchell, of Pontotoc, made a plea for a department of public health, with a physician as chief, not member at the head. He also urged the necessity for uniform medical practice laws.

In a symposium on syphilis, Dr. S. W. Johnston, of Vicksburg, gave a general historical review of the subject; Dr. M. H. Bell, of Vicksburg, discussed the early symptoms of nascent syphilis; Dr. E. F. Howard, of Vicksburg, expressed the opinion that education of young men in reference to its dangers would not

do much good in preventing the disease; he further suggested publicity and compulsory reporting of cases.

In an extensive paper on "Opium," Dr. B. F. Ward, of Winona, gave a general historical review of the subject, compared the effects of this drug upon the negro with its effects upon the white, and discussed its use in postpartum hemorrhage and strangulated hernia. He expressed the view that opium maintains uniform contraction of the nonstriated muscles. His views provoked considerable discussion and met with strong opposition.

Dr. J. M. Catchings, of Hazlehurst, discussed "Treatment of the opium habit by hyoscine-hydrobromate," reporting cases of cures in seven to ten days, with some recurrences. In the discussion, Doctor Buchanan, of the State insane asylum, considered the hyoscine method a dangerous one if not handled carefully; if properly handled he thought it probably the best method for the average practitioner.

Dr. Frank Jones, of Memphis, in a paper on "Some phases of acute nephritis," related an interesting case in which the patient had not lost consciousness during convulsions: there was a great reduction of the salts in the urine; urea was reduced about one-half.

ELEVENTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY, HELD IN BRUSSELS, BELGIUM, SEPTEMBER 2 TO 8, 1903.

The report of Passed Asst. Surg. J. M. Eager follows:

BRUSSELS, BELGIUM, *September 10, 1903.*

SIR: In compliance with official orders dated August 12 and 13, 1903, I have the honor to submit the following report of the proceedings of the Eleventh International Congress of Hygiene and Demography, held at Brussels, Belgium, September 2 to 8, 1903:

The congress consisted of two divisions, hygiene and demography, the seven sections of the first division meeting in the Palais de la Nation and the second division holding conferences in the Palais des Academies, so that during the sessions of the congress eight meetings were held simultaneously. The congress was under the patronage of King Leopold II of Belgium and the honorary presidency of Prince Albert of Belgium.

ORGANIZATION.

The following is a list of the different sections, the subjects assigned to them, and of their presidents:

First division—Hygiene.

First section. Bacteriology, microbiology, and parasitology applied to hygiene: Honorary Belgian president, Willems, member of the Royal Academy of Medicine; president, Van Ermengen, professor of the University of Ghent.

Second section. Alimentary hygiene, chemical and veterinary science applied to hygiene: Honorary Belgian president, Heynen, vice-president of the Chamber of Representatives.

Third section. Sanitary technology, engineering, and architectural science applied to hygiene: President, Lieutenant-General Docteur, inspector-general of fortifications and of the engineer corps of Belgium.

Fourth section. Industrial and professional hygiene: Honorary Belgian president, Cooreman, president of the upper council of labor, member of the Chamber of Representatives; president, Kuborn, president of the Royal Society of Public Medicine, at Serangoon.

Fifth section. Hygiene of common carriers: Honorary Belgian president, Leon De Bruyn, member of the Chamber of Representatives, formerly minister of agriculture and public works; president, Ramaeckers, secretary-general of the ministry of railroads, posts, and telegraphs, Brussels.

Sixth section. Administrative hygiene, prophylaxis of transmissible maladies, workmen's habitations, infant hygiene: Honorary Belgian president, Vergote, governor of Brabant, president of the upper council of public hygiene; president, Vlemminckx, member of the upper council of public hygiene, Brussels.

Seventh section. Colonial hygiene: Honorary Belgian president, Baron Van

Estevle, minister of the independent state of Kongo; president, Baron Wahis, governor-general of the independent state of Kongo.

Second division.—Demography.

Honorary Belgian president, Le Jeune, minister of state and formerly minister of justice; president, Sautour, secretary-general of the interior and public instruction.

Twenty-seven countries accepted the invitation of the Belgian Government to send delegates to the congress.

OPENING OF THE CONGRESS.

The congress was opened in the Palais des Academies September 3, having been preceded by a social meeting the previous evening. In the opening address Prince Albert, honorary president of the congress, said that through the advances made in recent years in hygiene the most widespread and deadly infections in bodies are now if not curable at least avoidable. The hygienist has become the savior of public health, his field of usefulness daily increasing with the augmenting complexity of society and the multiplying dangers of contamination with a population more and more compact. The progress of hygiene is not so much crippled by lack of resources as by private inertia and interested opposition. It is against these obstacles that public hygiene is applicable. At the present time authoritative intervention for the protection of public health is a principle accepted by all civilized nations. It is not sufficient that hygienic laws exist in the public codes—there is need of an active propaganda.

Monsieur Bero, president of the congress, in his opening address said, referring to the question of the transmissibility of bovine tuberculosis to man, that during the past ten years the Belgian Government has spent 10,000,000 francs for surveillance against bovine tuberculosis. This costly protection of public health had its justification in the silent but theory of the certainty of the transmissibility of animal tuberculosis to man. To-day learned bacteriologists whose authority is universally recognized openly combat this theory. Monsieur Bero expressed the hope that this question would be considered in full and that the discord that has divided large numbers of scientific men and public authorities might be calmed.

Monsieur Putzeys, general secretary of the congress, referring to the organization of the congress and their disposition of the sections, said that 1,900 members had subscribed, of whom 500 were official delegates.

Doctor Brouardel, president of the permanent commission of the congress of hygiene, said that Belgium is manifestly solicitous in matters of hygiene, especially as regards the habitations of the laboring classes.

The regular work of the sections was begun the afternoon of September 3, after the opening of the hygiene and demographic exhibition.

ARRANGEMENT OF CONGRESSIONAL WORK.

In the present report account will be given of work of particular moment brought before the congress, considering the labor of each section consecutively. More than 150 formal addresses were delivered, aside from incidental discussion.

First division.—Hygiene.

First section: In this section were considered the subjects of bacteriology, microbiology, and parasitology applied to hygiene, and the topics were taken up in a series of questions, as follows: (1) The mode of action and the origin of the active substances of preventive and antitoxic serums. (2) What are the best methods for measuring the activity of serums? (3) The value of antiphtheric serum from the point of view of prophylaxis. (4) The unification of procedures for the bacterial analysis of water. (5) Is human tuberculosis and that of domestic animals due to the same microbial species, namely, the bacillus of Koch? The fifth question was discussed in union with the second section.

Second section. The subject of alimentary hygiene, together with chemical and veterinary sciences applied to hygiene, was laid before the section in four questions: (1) What are the maladies of animals for slaughter that render the

meat unfit for alimentation, which of these meats may be eaten after sterilization, and which should be absolutely destroyed? (2) Regulation of the sale of meat destined for food, study of the causes that determine a variation in the chemical composition of milk, measures to be taken to prevent the sale of milk too poor in useful constituents, organization of control, and the analytical methods to be employed. (3) The sterilization of preserved food, conditions under which this operation should be effected, the verification of the sterility, and is there reason to tolerate a certain quantity of antiseptic in preserved foods not capable of being sterilized; and if so, what antiseptics may be employed? (4) The pasteurization of milk, the conditions to be observed, and the technical procedures to be adopted to destroy pathogenic microbes in milk without compromising the quality and the value of the product.

Third section. Sanitary technology, engineering and architectural science applied to hygiene, was the subject considered by this section. It was presented in six questions: (1) Purification from bacteria of sewage and residual industrial waters. (2) The advantages and the inconveniences of the single and the separate systems of sewage. (3) Establish from the point of view of the requirements of hygiene the conditions that should be fulfilled at calcareous springs. (4) Hygiene of public roads, the collection, transport, and final treatment of swill and other filth, and the hygienic rules to be followed in dwellings and towns. (5) The progress made in twenty years in the warming and ventilation of private and community buildings. (6) The general rules of hygiene to be observed in the distribution, permanent aeration, and the interior decoration of dwelling houses.

Fourth section. Industrial and professional hygiene. Six questions were considered by this section: (1) Ankylostomiasis. (2) Measures to be taken with a view to preserving the health of workmen occupied in factories where unrefined zinc and lead are handled or where compositions of lead are produced. (3) By what physiological methods degrees of fatigue may be studied in different trades, and what are the arguments that physiological and medical science can advance in favor of appropriate organization of labor? (4) What is the influence on the health of persons employed in spinning mills for flax, and what measures should be taken from the point of view of temperature and the hygrometric state of the air for the amelioration of the conditions of labor in such places? (5) Work involving the handling of hair, the conditions of insalubrity of this industry, the nature and gravity of diseases provoked thereby, and the measures to be taken to render the work healthful. (6) Indicate the sanitary measures taken in different countries concerning small industries and industries in domiciles. Discuss these measures, calling attention to those that it is desirable to modify or perfect.

Fifth section. Hygiene of common carriers: (1) The organization of the hygienic propaganda and the struggle against transmissible maladies by the active personnel of railroads. (2) The best measures for the disinfection of cars serving for transportation of travelers, animals, and merchandise. This question was treated by the fifth and sixth sections in joint session.

Sixth section. Administrative hygiene, prophylaxis of transmissible maladies, habitations for the laboring classes, and infantile hygiene: (1) Rules to be followed in the alimentation of children during the first year of life, means to be employed in order to bring into practice the notions of infantile hygiene, and, above all, the precepts for the feeding of nurslings, legal and administrative protection of the new born. (2) The aim in medical and hygienic inspection of public and private schools, the organization of such inspection, and conditions necessary to make it efficacious. (3) The intervention of public authority in the contest against tuberculosis. (4) The sanitary prophylaxis of pest and modifications to be made in quarantine regulations. (5) Public intervention for the construction of salubrious habitations for the needy laboring population. (6) Practical disinfection of habitations.

Seventh section. Colonial hygiene: (1) Alimentation of Europeans and indigeneous laborers in hot countries. (2) Prophylaxis of malaria. (3) Prophylaxis of the sleeping sickness. (4) Prophylaxis of beriberi. (5) Prophylaxis of smallpox in hot countries; vaccination and variolization. (6) Organization of instruction in colonial medicine.

Second division—Demography.

The division of demography met in a single section. Fourteen questions were considered: (1) Causes of mortality and a critical exposé of the statistics of

stillbirths in the different countries. (2) Mortality in early infancy, its frequency, its causes, and the measures to be taken. (3) The organization of uniform official statistics of the causes of death; the comparative frequency of the different causes of death in cities using the international nomenclature. (4) The basis of correct statistics of birth; demographical study of the tendencies to the increase and decrease of the birth rate; fluctuations in the birth rate. (5) What are the best coefficients to employ in the study of the laws regulating the marriage, birth, and death rates? (6) Examine the objections made to the law attributing a relation between marriage, birth, and death rates and the resources and needs of the people. (7) Statistical and dynamic demography of city populations. (8) Tables of mortality according to the trades of workers in different industries; the means of promptly and scientifically establishing such statistics where they do not exist and making them useful for comparison; to what point may the statistical tables of one country be utilized by another? (9) Mental alienation, its development and causes and the measures to be taken; the methods to adopt and the demographic data to collect concerning insane persons cared for at their homes. (10) The mortality caused by abuse of alcoholic drink—the facts, the causes, and the measures to be taken. (11) Interior migrations, the depopulation of rural places, increased population of cities; the advantages, inconveniences, and causes of the same and the measures to be taken. (12) Of what profit to demography would be the establishment of statistics of pauperism, and what is the best method to arrange these statistics? (13) Statistics and causes of suicide. (14) Archives as a source of historic demography.

First section: Bacteriology.—The work of this section was devoted principally to a study of the action and origin of the active substances of preventive and antitoxic serums and the best methods of measuring their activity, and to the unification of the bacterial analysis of water. These subjects were developed in such a technical manner that any brief conclusions as to the results of the discussions would be unsatisfactory and misleading. The addresses of the following reporters are therefore transmitted with this report: Doctor Bordet, director of the serotherapeutic institute at Milan; Doctor Denys, professor at the University of Louvain; Dr. R. Pfeiffer, professor at the University of Kongsberg; Doctor Roux, subdirector of the Pasteur Institute, Paris; Leon Grimbert, Paris; Doctor Loewler, professor of the University of Griefswald, and Doctor Malvoz, of the University of Liege.

The questions of the prophylactic value of antidiptheritic serum and of the unity of animal and human tuberculosis attracted a general interest at the congress. Bearing on the question of identity of bovine and human tuberculosis, Dr. D. A. De Jong, state veterinarian at Lyde, read a paper in which he concluded that the tuberculosis of man and of the other mammalia are identical; that they are caused by the same bacillus of Koch; that the bacilli isolated from man vary only in the degree of virulence from those of animals, and more especially the bovine bacillus is ordinarily more virulent than that of man, though this difference is not constant. The superior virulence of the bacilli of beef constitutes a danger that menaces the health of man not only as far as concerns the employment of milk and meat, but also because man may become infected by inhaling bacilli from bovines. Thus the study of the pathogenic action of the bacillus of human tuberculosis and that of tuberculosis of beeves on the different animals used for experiment, not only small laboratory animals but also large animals, does not give reason to believe that these two bacilli should be separated, but on the contrary there is a reason for considering them as identical. Doctor De Jong said that the tuberculosis of mammals sometimes spontaneously attacks parrots. The tuberculosis of the domestic fowl is caused by a bacillus having a different pathogenic action from the bacillus of mammals, and, though there is reason, from experiments already made, to believe that in time it may be possible by experimental methods to transform the bacillus of mammals into that of fowls, a conclusion can not at the present time be drawn as to the identity of these organisms. It must be admitted, however, that in mammals, side by side with ordinary tuberculosis, there is found a tuberculosis caused by the bacillus of the fowl. Thus the bacillus of the fowl can infect man and other domestic animals, and, on the other hand, the bacillus of mammals is susceptible of transmission to birds. Dr. G. Gratia, professor of the State School of Veterinary Medicine at Cureghem, presented an exhaustive paper expressing the opinion that, in the present state of knowledge, it must be admitted that human tuberculosis and tuberculosis of the domestic animals are of the same morbid species, and caused by the bacillus of Koch.

Variations, he said, exist in the morbid type and in the type of the bacillus, relating to form, cultures, and virulence. But these variations do not pass the limits of a specific type, and it may be added that, among the characters of any given specimen, there are no peculiarities that may not be acquired by other specimens of tubercular bacilli. The differences observed are due to differences in the culture medium, living or artificial, and are simply those of varieties. So three varieties of the species bacillus tuberculosis may be recognized, namely, the human, the bovine, and the avian. The human and bovine varieties, nearly related, often become confused in suitable media and this is seen in intermediary animals, such as guinea pigs, rabbits, dogs, cats, monkeys, horses, and even hogs and goats. Thus experiments have shown that these varieties are reversible and susceptible of passing from one species of animal to another. Still the danger is only relative, because in the real conditions of life tuberculosis is transmitted principally among congeners, although it is true that it may also be communicated by heterogenous contagion.

In the discussion that followed the reading of these papers, the section of alimentary hygiene joined with the section of bacteriology. The united sections adopted the following resolutions:

"Tuberculosis is more particularly transmissible from man to man. Nevertheless, the congress is of the opinion that in the present state of knowledge there is reason to maintain and prescribe hygienic measures against the propagation of animal tuberculosis to the human species."

As to the therapeutic value of antidiphtheritic serum, Doctor Netter, physician to the Trousseau Hospital, Paris, stated that the pediatric society of Paris, the Comité Consultatif d'hygiène publique de France, and the French Academy of Medicine have proclaimed highly the efficacy of preventive injections of antidiphtheritic serum and declare that its injection constitutes a preservative method against diphtheria. The number of prophylactic injections practiced in France is over 11,300. Doctor Netter himself has initiated 4,473 injections. Of the injections made, 4,121 were in the families of diphtheritics, and 2,000 in hospitals, asylums, infant homes, and schools in the course of an epidemic of diphtheria. Five thousand three hundred children in hospitals were submitted to systematic preventive injections in illness not fully recognized as diphtheria. Of these, more than 3,000 were subjects of measles and more than 1,000 of scarlatina. The injections confer an almost complete immunity during a period which begins twenty-four hours after the injection and ends ordinarily at the end of twenty-eight days. Those who develop diphtheria, notwithstanding the injections and outside the period of immunity, habitually present a very benign diphtheria, in the same way that smallpox is ordinarily light in the vaccinated. Inoculated subjects are exposed to the accidents of serum employment, but these are usually mild and do not justify abandoning the procedure. They are more common with adults. Their frequency is less if an old serum is used. Sometimes injections are followed by abscess. This shows a fault in aseptis. The dose of serum usually employed as a preventive is 500 units. Five cubic centimeters are usually employed at the Pasteur Institute. All children in a family where there is diphtheria should receive injections. This practice, indispensable where observation is impossible, should also be followed in families in easy circumstances where it is not difficult to watch children. In case of an epidemic in the wards of a hospital or similar institution, preventive injections should be employed without delay. It is also of great advantage to use this measure in day schools. Systematic inoculation, repeated every four weeks, protects children in institutions from a spread of the disease. It should be employed in all children's hospitals where the introduction of diphtheria is common, more especially in the wards for measles and scarlet fever. In the measles wards the doses should be strong and the intervals between injections short.

Professor Ehrlich, director of the Royal Institute of Experimental Therapeutics, Frankfort-on-the-Main, said that the elimination of diphtheritic antitoxin after preventive injections should be studied. Since in these cases minimum doses are used, ordinary methods of study can not be employed. It is necessary to use procedures which depend on the neutralization of small doses of toxins. Such research would have for its end the determination of the minimum quantity of antitoxin that a serum must contain to preserve the organism from diphtheria. The injection of the serum should be renewed if analysis of the blood shows the necessity. Persons treated by preventive doses should become subjects of a latent diphtheria, characterized by the production of an active immunization and the augmentation of the antitoxic contents of the serum. In the interests of prophylaxis, researches should be made to determine if these diph-

therias are frequent in subjects of the preventive treatment. Doctor Ehrlich's paper is transmitted in this report.

Papers presented by Dr. P. Aaser, of Christiania; Dr. François de Torday, of Budapest, and Dr. C. H. H. Spronck, of Utrecht, testified to the decided prophylactic value of injections of antidiphtheritic serum in practice in Norway, Hungary, and Holland, respectively.

Second section: Alimentary hygiene.—Sixteen reports were made to this section on the subjects of slaughterhouse inspection, examination, and preservation of food, milk inspection and pasteurization. The topics considered comprised the whole range of the diseases of food animals, tuberculosis and trichinosis receiving attention, but other maladies, such as albuminuria, hydræmia, melanosis, carcinoma, and diverse pathological conditions being discussed with a view as to whether the whole or part of the carcasses of affected animals could be used for alimentary purposes and what precautions are necessary.

The work on tuberculosis which was done in connection with the first section is recorded elsewhere in this report.

In regard to the preservation of alimentary substances, it was resolved by the section that the employment of food stuffs of bad quality or in damaged condition should be absolutely forbidden; the sterilization of preserved food stuffs should be complete; and that it is not possible to give a formula for sterilization applicable to all cases, since conditions differ according to the preparation, containers, and nature of these aliments, but that in all cases the containers should be hermetically sealed.

In regard to alimentation the following resolution was passed:

"The International Congress of Hygiene is of the opinion that alimentation is a powerful arm against transmissible maladies and that an international movement should be made having for its object the study and popularization of means to better the food of men and beasts."

Third section: Sanitary technology.—This section devoted itself to the questions of water supply, sewage systems, lime-laden waters, street cleaning, and the ventilation and heating of habitations. Of the 25 papers presented many were prepared by engineers, architects, and geologists, and were of such a technical nature as to preclude their being summarized. In the matter of the advantages and inconveniences of sewers on the single and separate systems, the unanimous resolution was adopted by the assembly that these systems may each be usefully employed according to circumstances, and that it is only after a comparative study in each particular case of the advantages and inconveniences of each system that the sanitary engineer can pretend to form well-founded conclusions.

Fourth section: Industrial and professional hygiene.—This section devoted itself, as will be seen from the enumeration of questions, to the consideration of prophylaxis of diseases of miners, workers in zinc and lead, flax spinners, and other unhealthy trades, making a study of the degree of influence of these trades on the health of the workmen and the means to be adopted to lessen or avoid illness. About 25 papers were read on the subject. The greatest local interest attached to the study of ankylostomiasis, a disease particularly prevalent among coal miners in Belgium.

Fifth section: Hygiene of common carriers.—The work of this section, consisting of the organization of a hygienic propaganda among railroad employees, the consideration of the prevention of the spread of transmissible maladies by railroad cars, and the methods of disinfecting such cars whether serving for the transportation of passengers, animals, or merchandise, had but little bearing on general epidemiology. Tuberculosis, skin diseases, and similar affections are the maladies against which the European sanitarian has largely to contend. The hygienic instruction of railroad employees, as considered before the sections, has a more practical application in relation to European than to American railroads. Transportation of the sick was also considered and the necessity for separate compartments insisted upon. The movements of railroad trains in times of epidemics was not dwelt upon.

Relating to the best methods for disinfecting railroad cars serving for the transport of passengers, animals, and merchandise, papers which accompany this report were submitted by Dr. P. Redard, physician in chief of the State railroads of France; Dr. Alois Lode, professor of hygiene, University of Innsbruck; Dr. H. Kossel, member of the sanitary office of the German Empire, Berlin, and Doctor De Recher, of the hygienic service of Brussels. Doctor Lode concluded that the disinfection of railroad cars for cattle as well as for

passengers is an important factor in preventing the propagation of infectious maladies, but that, if the procedures adopted are not appropriate, such treatment is not of advantage. In this matter there is much to be desired in the regulations of the various countries. In the disinfection of cattle cars it is necessary to destroy very resistant microbes. For this purpose the most preferable method is irrigation, repeated twelve or fourteen times, of a 5 per cent solution of chloride of lime employed cold under pressure of one-half atmosphere. This disinfection should be obligatory only when a case of infection has been discovered or when the car is suspected of infection. Passenger cars may be simply cleaned with a 2 per cent solution of soda or a 3 per cent solution of soft soap. This should always be done, too, in connection with disinfection. The disinfection of passenger coaches should also be obligatory when a case of infection has been discovered, or the coach is suspected of being infected. The best means for this purpose is a combination of formalin with the consecutive employment of antiseptic solutions, or steam at 100° C. For coaches of the third class it is better to employ, for each coach, 200 cubic centimeters of formalin (40 per cent formaldehyde) diluted in 1,200 cubic centimeters of water. For coaches of the first and second classes, employ 600 cubic centimeters of formalin diluted with 1,500 cubic centimeters of water. The vaporization of formalin should be effected by means of the Breslau apparatus. For coaches of the first and second classes it is necessary to remove the seats, if possible. The cushions, hangings, and carpets should be spread out in such a way as to permit the vapor to reach all parts. To neutralize the formalin, 100 cubic centimeters of a solution (25:1000) of ammonia should be used for the third-class coaches and 600 cubic centimeters of the same for first and second class coaches. When the treatment by formalin is finished it is necessary to wash the floors with a 1:1000 solution of corrosive sublimate, or a 2 per cent solution of creosol. All places soiled with the secretions or excretions of the sick should be treated with the solutions already indicated. In event of infection by diphtheria, scarlatina, measles, or tuberculosis, cushions, mattresses, and carpets ought to be disinfected by steam, a procedure which is absolutely indispensable in event of smallpox, pest, erysipelas, enteric fever, cholera, and dysentery. For corridor cars it is necessary to treat the corridors and cabinets (water-closets) with formalin if objects not disinfectible by vapor of water are found in these places. The funnels of the water-closets should be cleaned by brushing with a 2 per cent solution of lysol. It is necessary when possible to institute uniform regulations for the disinfection of railroad cars.

After an exchange of views on the subject of disinfection of railroad cars, the section by a unanimous vote adopted the following resolutions:

"The interior construction of railroad cars should be arranged in such a manner as to facilitate disinfection and ordinary cleaning. The suppression of hangings is notably desirable. All decorations should be movable. The ordinary cleaning of passenger cars should be made rigorous by using damp cloths on all movable parts and removing all decorations. The disinfection of passenger coaches should comprise the disinfection of surfaces, either by washing, by powdering with antiseptic substances, or by vaporization with formaldehyde or other substances of recognized efficiency, and the complete removal of decorations. Special transports should be employed for the sick and the dead. These transports should be built in a way to minimize the possibility of contamination and should be disinfected after each trip.

"For the transportation of cadavers to a long distance, the coffin should be hermetically sealed and the cadaver embalmed by an efficacious process. Cattle cars should be disinfected after each transport in a measure that the service permits. Freight cars should be disinfected when they have contained putrescible or suspected substances. The disinfection should be preceded by mechanical cleaning. The best methods for the disinfection of cattle and freight cars are steam under high pressure, or the repeated treatment of all walls by a liquid antiseptic under pressure, either by the Legarde or similar apparatus. Filtered solutions of the chloride of lime and diluted solutions of the hypochlorite of soda or potash offer every guarantee for the destruction of microbes and spores, but the damage they entail is an objection to them as well as to steaming. It is desirable that the same methods be employed in all countries. It would be useful to institute a series of experiments by an international commission with a view to determine one or several methods for the disinfection of cattle and freight cars fulfilling the conditions of economy, rapidity, and efficacy without damage to material."

Sixth section: Administrative hygiene.—Bearing on the first question relative to alimentation of children during the first year of life, papers were submitted by Doctors P. Baudin, professor of the faculty of medicine of Paris; Clerfayt, secretary of the medical commission of Mons; Heubner, director of the infants' clinic and professor of the University of Berlin; and Wilhelm Knoepfelmacher, privat-docent of pediatry, Vienna University, and physician in chief to the Caroline Infants' Hospital, Vienna. These contributions, treating of nursing, the preparation of artificial infant food, and the propaganda of correct notions in infant feeding, are of more interest from a pediatric and educational point of view than from that of public sanitation.

The question of the medical and hygienic inspection of public and private schools was exhaustively treated in papers by Drs. G. Chauvin, of Liege; Erismann, professor of hygiene, University of Zurich; Axel Holst, professor of hygiene, University of Christiania; Laquer, Frankfort-on-the-Main, and Mosny, of Paris.

Doctor Chauvin stated in his address that the observation of transmissible maladies in schools permits of their early recognition and the consequent application of prophylactic measures. Medical inspectors of schools should be especially educated for their work and should be sufficiently well paid to enable them to devote their time exclusively to school work. They should be teachers of hygiene not only to the pupils, but to the general teaching corps. At the commencement of the school year they should make a careful examination of all pupils, keeping a special lookout for feeble children and those with defective sight and hearing. In times of epidemics all pupils should be submitted to a daily medical examination on entering class. The medical inspectors should pass on the readmission to school of children previously dismissed for illness, should make inquiries at the homes of sick school children, should be charged with the vaccination of pupils in times of smallpox, and should be consulted in the hygienic arrangement of school buildings and furniture. The other addresses were of the same nature as that of Doctor Chauvin.

The following resolution was passed:

"The Congress, considering that the school has for its aim to increase the social value of the individual by a reasonable culture of the physical, intellectual and moral faculties of children, there should be included under the denomination of medical and hygienic inspection of schools all that concerns the health of scholars, not only in the strict sense of their preservation against transmissible maladies, but in the larger sense of their integral physiological culture and the adaptation of intellectual culture to the physical capacity of each scholar; a resolution is passed that the medical and hygienic inspection of schools, by a competent personnel, requires: 1. The surveillance and salubrity of schools. 2. The prophylaxis of transmissible maladies. 3. The periodic and frequent control of the normal functioning of organs and the regular growth of the physical organism and the intellectual faculties of the child. 4. The rational culture of the physical organism. 5. The adaptation, in accord with the teacher, of the culture of the intellectual faculties in proportion to the individual physical capacity of the child."

In connection with the question of the intervention of the public authorities in the contest against tuberculosis, Dr. P. Brouardel, professor of the faculty of medicine, Paris, reviewed the laws regulating tuberculosis in France, Great Britain, Germany, and Norway. The importance of individual hygiene and the salubrity of habitations, shops, factories, and offices was referred to, and the direct intervention of the public authorities, especially in the protection of man against tuberculosis in animals, was considered to be of immense importance. Doctor Brouardel expressed the opinion that it is the duty of governments to create and subsidize sanatoria for the tuberculous. Professor Pannwitz, secretary-general of the international bureau of tuberculosis, Berlin, gave an account of what has been done in Germany by the establishment of sanatoria, notably through the intervention of the German Empire. Doctor Santoliquido, director-general of the hygienic services of Italy, showed that the mortality from tuberculosis has been diminished in every place where serious and scientific sanitary measures have been employed. He said that as to prophylactic efficacy of sanatoria it is difficult to form an opinion, inasmuch as their prophylactic influence is of secondary consideration. Doctor Calmette, director of the Pasteur Institute, at Lille, said that it was the duty of the state to share the expenses of sanatoria, thus stimulating private initiative. He considered dispensaries for tuberculosis important instruments of prophylaxis.

Doctor Pannwitz enunciated the following as fundamental principles in the contest against tuberculosis: That tuberculosis, being an infectious malady, can be combated only by early detection of affected persons, the destruction of germs spread by the sick, and the isolation of the sick as long as they are casting out germs. The detection of the sick can be effected by obligatory reporting of all cases of tuberculosis, by voluntary notification by the sick themselves, and by a search for tuberculous persons by the sanitary personnel. The destruction of germs is to be effected by disinfection. Isolation may be made in the houses of the sick, in general hospitals, or in special establishments for the tuberculous. Of these latter establishments, it is necessary to construct, in addition to the sanatoria, asylums for advanced cases. The duties of the public authorities in respect to tuberculosis were enumerated by Doctor Pannwitz. He said that these duties consisted in enforcing notification by law; in favoring the erection of small lodgings, with special arrangements for isolation in the family; in the inspection of hotels, boarding houses, and such public lodging places; in the installation of isolation places in hospitals; in the erection of sanatoria for curable cases and asylums for those with advanced lesions; in the surveillance of schools, factories, military institutions, etc.; and in the popularization of hygienic education. Measures, such as obligatory life insurance and other means calculated to prevent the spread of neediness and pauperism acted also in limiting the spread of tuberculosis. With a view to diminishing the predisposition to disease, institutions should be favored which give opportunities for bodily exercises, cleanliness, and comfort in convalescence from any disease. A propaganda against alcoholism and sexual maladies is also helpful against tuberculosis. And, lastly, governments should concern themselves with the collection and publication of complete statistics of morbidity and mortality, in order that the efficacy of the measures recommended may be determined.

Papers were also presented by Dr. Knud Faber, physician to the Frederik Hospital, Copenhagen; Doctor Moeller, president of the provincial medical commission, of Brussels; Doctor Ruysch, of Holland; Arthur Newsholme, medical officer of health, Brighton, and Dr. Fr. Schmid, director of the federal sanitary bureau, Berne. These speakers treated of tuberculosis in their respective countries and the measures adopted to combat it. The principles set forth by Doctor Pannwitz were agreed to with such modifications as the customs of different countries necessitate.

By a unanimous vote the following conclusions, proposed by M. Leduc, were adopted:

"Antitubercular prophylaxis demands as a duty of public authorities the rigorous application of laws and regulations concerning the salubrity of habitations; sanitary police measures to be prescribed by law; legislation regulating the conditions and hours of labor (apropos of which it is desirable to intervene by means of an international entente); the extension of communal, canton, or regional regulations according to local necessities. Concerning assistance to the tuberculous by popular sanatoria, dispensaries, air cures, asylums, etc., the state should favor these and give aid in the largest measure as an initiative to private individuals, social groups (departments, provinces, communes, philanthropic and labor associations, mutual companies, etc.), so permitting them to spread their benefits according to the social spirit and individual needs of each nation. The state should encourage, by all means at its disposal, societies for the promotion of cheap but suitable habitations, cooperative food societies, and leagues against alcoholism."

The next question brought before the section was that of the sanitary prophylaxis of pest and the modifications necessary in quarantine regulations.

Dr. A. Calmette said in substance that to-day, owing to the present state of knowledge of the pest bacillus, one can look calmly on the possibility of the importation of bubonic plague into Europe. The moment has come, the speaker said, to suppress the employment of Draconic measures invented as a defense against its importation. Quarantine, which has undergone successive attenuations at each international sanitary conference during the past half century, must disappear. Henceforth it will no longer be justified, either against yellow fever, cholera, or pest. Doctor Calmette said that, as far as pest is concerned, he hoped to prove this statement in his report. It is well known that, though plague can propagate itself from man to man, the principal agents of contamination are rats by intermediation of the fleas that infest them. Direct transmission from man to man is above all effected by nasal, bronchial, and throat secre-

tions, in which the bacillus of pest abound. Roux and Batzaroff have proved how easy it is to produce pneumonic pest in such susceptible animals as the rat, the rabbit, and the monkey by simply treating the nostrils with cultures of pest or with expectorated matter containing the microbe. In recent epidemics in Europe it has been shown that contagion has been conveyed by practically the same mechanism in the persons of attendants or those sick with the pest (Vienna, 1898; Glasgow, 1901), or in those having contact with cadavers of pest patients. One must admit also that soiled clothes, garments, and other objects belonging to the sick can transport to a distance and retain for many months living and virulent germs of pest. One of the most striking examples of this was the importation of pest from Mauritius to Durbin, Natal, in 1900. A Mauritian, in order to avoid too long a sojourn in quarantine, continued his voyage to Port Elizabeth, so as to make a trip sufficiently long to be immediately admitted to free pratique. April 1 he arrived at Durbin. A month and a half later, May 13, he opened a part of his baggage. Three days later he fell ill, and died May 18. Many other facts show that articles soiled with pest bacilli, even when they have been closed in trunks for several months, are capable of transmitting pest. Bags containing cereals and various merchandise in which pest-infected rats find lodgment are equally dangerous. It has happened several times that men employed in the debarkment of such merchandise have fallen ill after having slept on bales recently landed or on empty bags. It is evident, then, that the superficial disinfection of baggage and the cargo of vessels such as now practiced at quarantine stations is altogether insufficient and inefficient. On board ships it is the rat that is most frequently responsible for the spread of pest. The fact of having touched the cadavers of rats is a particularly frequent cause of infection. In cities pest finds special lodgment in dirty quarters of the town and in houses in the neighborhood of collections of filth, sewers, docks, and storehouses for grain, places where rats abound. Among the sick cared for in hospitals one can often find the trace of recent stings of parasitic insects, such as fleas and bedbugs, the point of departure of a lymphatic vessel leading to a bubo. Finally, laboratory experiments demonstrate that to infect healthy rats it suffices sometimes merely to place them in a case or jar in which there are fleas that have deserted the cadaver of a rat dead of pest. It has been questioned whether the fleas of rats are capable of biting man, but the recent work of Gauthier and Raybaud (*Revue d'hygiène*, Paris, 1903) and of Carlo Tiraboschi have put this important question beyond controversy, and it is now perfectly established that certain species of rat fleas bite man. The fleas met with most commonly in rats belong to several species. Their scientific determination and their rôle as agents for the transmission of pest has been well studied in the memoir of Tiraboschi (*Archives de parasitologie de Blanchard*, 1903). In the gray rat (*Mus decumanus*) and the black rat (*Mus ratus*) the human flea (*Pulex irritans*) and the dog flea (*Tennocephalus serraticeps*) are often found. Both bite man. Rats also carry parasites of other species, which, even after fasting for three or four days, refuse to bite man. Among these Tiraboschi mentions as the most frequent, in Italy at least, *Ceratophyllus fasciatus*, *Ceratophyllus italicus*, and *Ctenopsylla musculi*. Mice, though very sensitive to inoculated pest, do not appear to be spontaneously affected, at least in a proportion comparable to rats, in times of epidemics. There are not found in their fur the species of fleas that bite man or dogs. On the contrary, there exists in Mongolia and in the region of Lake Balkal the *Aretomys bobac*, a gnawing animal closely resembling the marmot, which possesses a great sensibility to pest and appears to transmit the malady to man with great facility; but the parasites that aid in this transmission have not been determined.

Everywhere it has been observed that during prevalences of pest among rats, preceding or accompanying the disease among men, rats migrate en masse as soon as mortality begins to strike them. These emigrations of rats have been in all cases the sole factor in the dissemination of the malady. It has also been widely remarked in the course of the last few years that rats embark in crowds in the ports of the Indies on vessels moored along the quays. They go ashore in large numbers at night. All the rats that come from the Orient belong to the species *Mus decumanus*, a species so invading and prolific that they completely drive out of the European cities the small black rat (*Mus ratus*), which is now hardly found except in inland places. On board vessels in the Mediterranean it frequently happens that pest rages among the rats without a single case of the disease being observed among the crew or passengers. This is a very great danger, because these vessels, having no sick men aboard and not coming directly

from contaminated ports, are allowed to land their passengers and cargo. It is thus evident that, at least as far as concerns pest, the sanitary regulations at present applied are of no value. International sanitary prophylaxis against pest must henceforth be based almost entirely on the adoption of defense against the importation of exotic rats and on the methodical destruction of indigenous rats, because no serious epidemic focus can be created if the disease is not disseminated by these animals. It will always be easy, in fact, by means of isolation and disinfection to hinder the direct contamination of man by man. The preventive effect of the antipest serum is sufficiently sure to protect against infection those persons brought in contact with the sick. It can then be affirmed that it is perfectly useless, because of one or several cases of pest aboard ship, to oblige the passengers and crew of the vessel to submit to detention in a quarantine whose material organization is, the majority of times, very defective. It is sufficient to prevent the vessel from coming near the quays until it has been efficaciously disinfected and all the rats destroyed. The sick should be debarked and isolated and the passengers should be allowed to go ashore immediately, provided they first submit to a preventive inoculation of antipest serum, that they rest for five days under sanitary observation, and that all their baggage be submitted to complete disinfection. For the disinfection of vessels, cargo, and baggage neither vapors under pressure, spraying, washings, or other resources of existing European lazarettos are effective. The only really sure means is sulphurization by sulphurous anhydride mixed with sulphuric anhydride in high concentration—such as is obtained, for example, by the American apparatus of Clayton. This gas, very diffusible and eminently toxic for rats and all insects, penetrates with great rapidity into the interior of bales of merchandise and into the remotest recess of the hold. It does not cause the sensible deterioration of the objects disinfected and its disinfecting action on the pest bacillus is perfectly established. The effects and baggage of passengers can be put apart and disinfected on a flatboat. It is sufficient to open the trunks without touching their contents and to treat them for four hours with a gas containing at least 8 per cent of sulphurous acid and 4 to 6 milligrams of dry sulphuric anhydride to the liter of air. It has been proposed to destroy rats on board ships by carbonic acid and oxide of carbon. This procedure has been employed at Marseille and Hamburg. It is sufficiently successful in killing rats, but, lacking a diffusibility comparable to that of sulphurous gas, it does not reach insects and does not exercise any disinfectant action on pest bacilli. Further, its employment is not exempt from danger, as it is destitute of odor. Doctor Calmette recommended that existing quarantine measures be modified as follows:

1. The suppression of detention in lazarettos and its replacement by simple sanitary surveillance of five days for such passengers as submit to a preventive inoculation of antipest serum, even when such passengers come from vessels having had cases of pest aboard during the passage.

2. Authorization for passengers of a suspected vessel who refuse to submit to inoculation to debark without hindrance at the port of arrival on condition that they will reside there for ten days and present themselves daily during that period for observation by the sanitary authorities.

3. Limitation of detention for vessels and cargo to the period strictly necessary for the destruction of rats and insects and the complete disinfection of all parts of the vessel and cargo.

4. Organization in all ports open to international commerce of methodical destruction of rats, on shore and on board, the disinfection service to be severely and scientifically controlled in such a manner that the efficacy of measures taken to destroy rats, insects, and the pest bacilli can be officially guaranteed.

5. The obligation for all vessels putting in at Mediterranean ports of the Levant or in those of the Red Sea, of the Persian Gulf, of India, of Indo-China, or other suspected or contaminated countries to be provided with a sufficient quantity of antipest serum to vaccinate all the passengers and crew if a case of pest should appear during the passage.

Doctor Ringeling, physician in chief of the hygienic service of the city of Amsterdam, submitted the following conclusions:

1. A revision of the general sanitary regulations to prevent the invasion and propagation of pest, adopted by the convention of Venice, March 19, 1897, is urgent.

2. This revision should have for its results—

- (a) The determination in general of the rules according to which the sanitary service of the different countries should be organized to combat pest and

epidemic maladies. The contracting governments should engage to organize the sanitary service in accordance with regulations to be prescribed.

(b) The establishment of regulations to be followed in the preventive treatment of persons having had or likely to have contact with pest patients or with their possessions. The contracting governments should engage to act accordingly.

(c) The establishment of measures to be taken for the destruction of rats and other vermin in docks, storehouses, on board vessels, etc., at the port of departure during the voyage, and at the port of arrival. The contracting governments should engage to follow the prescribed measures.

(d) To enact by law that the discharge of cargo from vessels shall be under the assiduous observation of the sanitary service and that the employees of the service shall apply the prescribed measures with the least practicable delay in event of pest being found aboard among men or animals.

(e) To enact by law that the disinfection of merchandise shall not be done except when, according to the rules prescribed by the convention, it is judged necessary.

3. The revision of the general sanitary regulations can be made in accordance with Article V of the convention through diplomatic channels. It concerns the Eleventh International Congress of Hygiene and Demography to call the attention of the different governments to the changes and deficiencies in the general sanitary regulations, and to request that the desired changes be made through diplomatic channels.

4. That in order to formulate and translate the new articles to be submitted to the different countries, the executive committee of the congress should be assisted by a council of experts, members of the congress, the council to be composed by preference of delegates of the different countries adherent to the convention of Venice.

Doctor Nocht, physician to the port of Hamburg, director of the Institute of Tropical Diseases and of the Seamen's Hospital, Hamburg, said that he did not think it admissible to allow passengers from an infected vessel to go about town after having been inoculated. As for sulphurous gas, experience has shown that it does not kill everything. For example, it does not kill pest bacilli in excrement and in the cadavers of rats. Besides, the gas spoils flour, tobacco, and tea, and as a consequence there are numbers of claims for damages when the gas is used. Disinfection by oxide of carbon is preferable after discharging the vessel of its personnel. As for the visit, it should be made by special physicians. Vessels should have microscopic apparatus in order that malaria may be distinguished from pest aboard ship.

Dr. Edm. Franck, royal inspector of sanitary services to the ministry of the Interior, Budapest, said that if vessels were examined and disinfected properly prior to sailing disease could not develop so easily aboard. But maritime sanitary measures are deplorable. The inspection is made hastily, nothing is done for the hygiene of the passengers, and the state as regards cleanliness leaves much to be desired. The disinfection is hardly better. Even trunks are not opened. Yet one is surprised to see pest break out periodically. The conference of Venice extolled above all the application of quarantine, but the duration of observation is not always rationally fixed. It is said that in Greece and Austria quarantines hardly give efficacious results. The visit and observation of passengers does not constitute a sufficient guaranty. As concerns cargo, the measures taken are also illusory, because they are based on certain data regarding the nature of the malady, data that are often difficult to establish. In Hungary the port physician and the sanitary authorities share the responsibility for measures adopted. The speaker, referring to contamination by rats, said that there are always foci of pest in the extreme Orient and that a control is indispensable, notably in the Suez Canal. It is essential that rules of hygiene be strictly observed on vessels, and that rat hunting be energetically pursued. In this respect the education of responsible physicians should be attended to, and their authority increased.

Dr. N. Freyberg, chief of section of the medical department, St. Petersburg, said that the detention of persons presenting neither the symptoms of pest, nor suspected symptoms of the disease, is a measure that can be dispensed with even for infected vessels, and replaced by sanitary observation and antipest inoculations. The destruction of rats should be practiced on all vessels from foreign ports, and should form one of the functions of quarantine establishments. This obligation should be established by a sanitary conference held with that view.

It is desirable that a special international and official journal be created in which should be recorded all information bearing on the march of epidemics of pest and cholera, and the measures taken in the different countries. Governments should assume the obligation of furnishing officially the necessary data for publication in such a journal. Title III, Chapter II, line 2, of the rules annexed to the convention of Venice should be altered to read: "But this restriction, limited to the contaminated area, should only be accepted on the formal condition that the government of the contaminated country take the necessary measures to prevent the exportation of susceptible materials coming from the contaminated area, as well as the isolation of the sick and other prophylactic measures."

M. Wilde, of Argentina, spoke of the large sums expended by his Republic for sanitary improvement of ports, and said that a system should be adopted whereby, through a small tax on the ships, these expenses could be made to fall on navigation.

M. Manolesco, Roumania, said that it would be better for the congress to enunciate a project of maritime regulations rather than to leave the work to committees, where the diplomatic element, generally incompetent, dominates. Very often the captains of vessels fail to declare infection except in extremis. This is a great danger. It is important that this declaration be imposed under forfeit of damages in case of nondeclaration, the damages payable to the country infected. Most vessels have no ship's surgeon and, when there is one, he is generally not up to his task. Sanitation in the oriental countries should be insisted upon. In the Orient the regulations are often a dead letter.

Doctor Brouardel said that it was pleasant to see that ideas favorable to quarantine had lost ground. More scientific ideas were gaining hold. Commissions should be formed in different ports in order to reenforce the authority of sanitary directors.

Monsieur Ruysch thought it was not sufficient to have a ship's doctor. They are generally incompetent persons. If any confidence is to be placed in the physician on board, the medical officer must be an officer of the state.

The following desiderata were formulated in concluding the question of pests:

"In consideration of the fact that recent data incontestably prove the rôle of rats as agents in the propagation of pest aboard ship, even when there is no case of human pest aboard and when the ship does not come direct from infected ports; and also in consideration of the security procured by preventive inoculations of antipest serum to crews and passengers brought in contact with the sick: *Resolved*, That the congress express the opinion that quarantine measures now applied be modified as follows:

"1. The limitation, in the largest sense of liberalism, of isolation in lazarettos and its replacement, whenever the sanitary authorities judge it possible, by a simple observation of ten days at the port of arrival, this observation being reduced to five days for passengers who consent to submit to a preventive inoculation of antipest serum, even when these passengers come from a ship having cases aboard during the passage.

"2. Limitation for vessels and cargo of the duration of quarantine to the time strictly necessary for the destruction of rats and insects and the complete disinfection of all parts of the vessels and cargo.

"3. Organization, in all ports open to international commerce, of a methodic destruction of rats, as well ashore as aboard, and of disinfection, severely and scientifically controlled, in such a manner that the efficiency of measures taken to destroy rats, insects, and pest bacilli can be officially guaranteed.

"4. Obligation for all vessels that put into Mediterranean ports of the Levant or in those of the Red Sea, of the Persian Gulf, of India, of Indo-China, or of other suspected or contaminated countries, to be provided with a sufficient quantity of antipest serum to vaccinate the passengers and all the crew if a case of pest should appear during the voyage.

"5. To invite the attention of interested Governments to the necessity of appointing sanitary physicians specially instructed with a view to the mission they are to fulfill, commissioned by the controlling power, and independent of companies of navigation."

The congress passed a resolution that the International Sanitary Conference that is to meet at Paris, October, 1903, be asked to deliberate on the foregoing desiderata, with a view to elaborating a set of regulations for the defense against pest more in conformity with modern science and with the needs of international commerce.

HABITATIONS.

Passing to the question of the habitations of the laboring and needy classes, a paper was read by Guillaume Fatio, president of the society for the amelioration of lodgements, Geneva, in which the desirability for better habitations in Switzerland for the classes in question, both in the towns and cities, was interestingly developed.

Monsieur Pierson, formerly minister of finances at the Hague, said that the conditions of the problem of habitations for the laboring classes is far from being uniform in different localities, and for this reason, as well as from an economic standpoint, it is impossible to give fixed and detailed rules regarding the arrangement of such habitations.

It is only possible, Monsieur Pierson said, to treat the subject on broad lines, combat certain errors, and indicate the method to be followed in applying general principles to individual conditions. In this way the speaker developed his subject, referring largely to the fiscal aspects of the matter. The subject was also treated of in a paper by Dr. H. Albrecht, of Berlin, impressing the importance of public intervention in the matter and referring to the usefulness of life assurance associations. These three papers are transmitted with the present report.

Doctor Dufourmantelle, of Paris, considered the subject from a French standpoint, expressing the opinion that the state should encourage better habitations for the laboring classes by indirect intervention in the form of fiscal favors and by direct intervention in the form of insisting through public officers on the suitable construction and maintenance of these habitations.

The question of the practical disinfection of houses was interestingly treated by E. von Esmarch, of the University of Göttingen, and M. Herman, director of the provincial laboratory of bacteriology, Mons. The papers are inclosed with this report. Von Esmarch said that the disinfection of domiciles is an important factor in the struggle against infectious diseases. It is necessary to distinguish continuous disinfection at the bedside from final disinfection practiced when the sickness is terminated. Continuous disinfection is the most important, but it is the most difficult to realize in a satisfactory manner. In order to accomplish it, it is necessary to enlighten the families of the sick on the subject of the importance of this disinfection. This should be one of the tasks of the physician, but should also be promoted by popular brochures distributed by the public authorities as soon as disease is declared. The public authorities should also distribute disinfectants gratuitously, or at a reduced price, and should exercise a surveillance as to the manner in which these disinfectants are used. At the conclusion of the sickness disinfection should be practiced by public hygienists. There should be uniform regulations relative to the final disinfection, which should be gratuitous. Great importance attaches to the choice and education of employees engaged in the practice of disinfection. The final disinfection should include the choice of the disinfectant appropriate to the malady, the degree of extension necessary to give to the disinfection, the choice of the most favorable time for disinfection, and a care for the lodgment during the disinfection of the residents of the house in which the sick person has been lodged.

Doctor Herman said that the paraphernalia and agents of disinfection should be as limited as possible consistent with efficiency. Progress in the practice of disinfection consists much less in the discovery of new antiseptics than in the proper application of recognized methods, which, indeed, are numerous enough. Among the agents which meet all requirements are fire, steam, and chemical products, such as corrosive sublimate, lime, soda, aromatic bodies (creosol, for example), and formaldehyde. It is much better to employ these efficacious and accessible agents than to burden the arsenal of disinfection with new products more or less active. It is essential, above all things, to educate the masses in rational and progressive ideas of general hygiene and disinfection. This should begin with primary teaching, and should not merely comprise a dry enumeration of methods and means of disinfection, but should take the form of lessons of cleanliness not only as a virtue and polite quality, but as one of the fundamental principles of hygiene. This education should be continued in the higher classes by an exposé of the physical and chemical action of agents employed for the destruction of morbid germs. Concerning the education of the masses, the subject could be made tangible to the public by exhibits in museums. The hygienic house is yet to be realized. In the houses of the rich it may be possible to have a special sick room, the walls to be painted in oil and covered with leather hangings, unstuffed furniture, a bed without curtains, and windows easily

washed. This is the idea of Mendelsohn (*Der Comfort der Kranken*, Berlin, 1892), but it is difficult to realize. Still it is desirable that all habitations—those of the rich as well as those of the poor—should be constructed in such a manner as to permit of easy and complete disinfection.

The following resolutions were adopted regarding the disinfection of houses:

“Disinfection of habitations should not be made except by procedures and apparatus the efficacy of which has been determined by precise experiments and verification. The practice of disinfection of houses in case of transmissible maladies should be submitted to an administrative control and to a technique the conditions of which it is urgent to establish with precision. The section requests the permanent international committee to make the control of disinfection one of the orders of the day at the next congress. Disinfection should be practiced by competent and tried employees instructed in special schools. It is desirable that disinfection be gratuitous. A competition should be opened to offer, on the occasion of the next congress, a prize to the author of the most efficacious and simple procedure for disinfection in infectious maladies occurring in small houses in localities of less than 3,000 inhabitants.”

Seventh section: Colonial hygiene.—The work of this section, relating principally to the prophylaxis of diseases of tropical and subtropical countries, was of decided interest from a general sanitary point of view. The president of the section in opening the session called attention to the importance of this branch of the work of the congress, especially with a view to enlightening Europeans who are undecided in the matter of the hygiene that should be adopted in tropical countries. Doubt had often led Europeans to neglect all hygienic measures applicable to hot countries, to the great prejudice of health and often to the sacrifice of life.

Doctor Renaud, physician in chief of the colonies (retired), professor in the School of Medicine, Marseille, and professor of hygiene at the Colonial Institute; Dr. C. L. Van der Burg, formerly health officer at Utrecht, and Dr. H. Dupont, surgeon of battalion of the regiment of engineers and physician to the independent Congo State, presented papers treating of the food of Europeans and indigenous laborers in hot countries. Doctor Reynaud was of the opinion that the safest guides in determining the proper alimentation for the Tropics are certain experimental facts and the composition of the ration freely and instinctively chosen by the natives and by resident foreigners rather than by the imperfectly understood physiology of man inhabiting hot countries. Thus the alimentary régime may be approximately established. The mode of alimentation of Europeans in these countries need hardly differ from that in Europe. But it should be distinguished above all by sobriety, which aids in the adaptation to change of climate. The ration should contain the least possible quantity of aliments of high calorific potential; a proportion of easily assimilated azotic aliments, always more than the indispensable minimum; it should necessitate only slight digestive exertion and should constitute a small volume, and should be composed of varied elements and be exempt from morbid germs. The rations, differing according to the season and country, valued in calories per kilogram of living weight, should be:

Ordinary ration (equalling 35 to 38 calories)—

1.25 to 1.75 grams of albumin (minimum).

0.75 grams of fat (maximum).

0.50 grams of alcohol (maximum).

3.55 to 5.30 grams of hydrocarbons.

Moderate to full working ration (equalling 36 to 38 calories)—

1.50 to 2.25 grams of albumin (minimum).

0.75 grams of fat (maximum).

0.50 grams of alcohol (maximum).

4.30 to 6.40 grams of hydrocarbons.

Sugar furnishes a part of the supplementary energy necessary for hard work. Alcohol has useful but transient effects. Its dangers are rapidly grave in the hot zone. Alterations in food by heat and parasites should be watched for and avoided with care. The two principal meals of the day, composed generally of two dishes and a dessert, should include as much fresh vegetables and fruit as possible. Table drinks should not contain a total of more than 40 grams of alcohol. Potable water, always to be purified, should be taken in sufficient quantity to cause an abundant diuresis.

Doctor Van der Burg said that ideas of tropical alimentation had formerly rested on the assumption that the blood of Europeans is altered in composition by a sojourn in the Tropics. Tropical anemia had heretofore formed the basis

of this way in both countries. But this year Munster has shown that the number of red crosses in the food is not too great. Eijkman and Van der Meer have verified these findings and have further determined that the composition of the food is the cause in the Tropics as in Europe. In the Tropics where a strong antiseptic diet, which is needed in small quantities only. The appetite for a certain food is not great, possibly from the diminution of hydrochloric acid in the stomach from the use of hydrochloric acid, by excessive perspiration. Still a vegetable diet is not to be recommended because too much of a soft vegetable diet is not a large bulk of vegetable diet has to be absorbed. A man of good constitution can retain his health in the Tropics if he will not indulge in any excess in the use of preserved food, of sugar or products of their distillation or of alcohol.

Dr. H. Prout said that it is necessary to be cautious, and especially in countries where malaria is to be a mild diet, and it is important to determine in a special manner what food consumed by residents has the property of being easily digested.

During the question a resolution was adopted to the effect that it is not necessary to diminish the consumption in both countries but is it necessary to increase the ration of meat.

In regard to the prophylaxis of malarial fevers were submitted by Doctor Gell, professor of Hygiene, University of Rostock; Doctor Pott, of Berlin; Maj. Ronald Ross, professor of tropical medicine in the University College, Liverpool; and Dr. Patrick Manson of the Liverpool School of Tropical Medicine. Doctor Gell dwelt emphatically on the prophylactic use of quinine salts, 120 to 40 centigrams per day for adults, the half for young children, claiming that there is a general infection of the blood of malarial persons is effected. He also urged the importance of the removal of prophylaxis of habitations and unsound forms of the human body, the hygienic sanitation of agricultural land, and the destruction of mosquitoes.

Maj. Ross said that it is the unanimous opinion of himself and his colleagues that the ordinary mosquito net when scrupulously and intelligently used affords the most valuable personal means of protection against malaria. Unfortunately, he said, nets can not be afforded by the bulk of a native population, or even by the poorer whites, such as sailors and miners, and there are many persons who, from obstinacy, ignorance or carelessness, refuse to employ them, though they can well do so. Quinine screens, punkies and fans were also recommended. Doctor Ross believes in the limited efficacy of the segregation of Europeans where possible in the Tropics, but says that segregation can never be perfect and probably the money had better be spent otherwise. While fully admitting the value of cinchona derivatives as prophylactics, Major Ross said that because quinine is despised by many persons who quite believe in its preventive efficiency refuse to take it, however great the risk of infection. Nutrition, isolation, and treatment of the infected might be practicable in countries where the cases of malaria are few, but in many tropical places, where half the native children and a large proportion of the adults are infected, where there are few medical men, and where there is a constant influx of infected persons from without, there are insuperable difficulties in the way of employing these measures. Referring to the suppression of mosquitoes, the speaker said that by this he did not mean the suppression of mosquitoes over large rural areas, but only in the principal centers of population. Therefore, only approximate, not absolute, results can be expected. This work implies, first, permanent drainage and leveling of pools, and, secondly, the constant employment of sufficient labor for dealing with newly formed pools, for the reticulation of those which can not be drained, and the removal of mosquito-breeding rubbish from houses. It was repeatedly stated that the reduction of mosquito-borne disease will vary as the square of the reduction in the number of mosquitoes. In answer to the frequent demand that it is possible to reduce the number of mosquitoes in any locality, Major Ross said that on a small scale many campaigns against these insects have been recorded, especially in the United States. He cited a campaign on a large scale, the fight against mosquitoes in Habana, in which the mosquitoes were reduced to 10 per cent of their former number and, at the same time, yellow fever eradicated from that large city.

Doctor Manson said that besides the mosquitoes there is, in all probability, an additional host of malaria. Whatever it is it is removed by drainage. In England *anopheles* exist, but there is no malaria. This additional host is some animal closely associated with man. It is the duty of students every-

where to try to find it. Bird malaria may have a bearing on the question. Doctor Manson expressed the desirability of impressing on governments the necessity of introducing in popular educational institutions the study of the hygiene of malaria. He said that many officers in the Tropics, and even professors, have an inclination to look on mosquito nets and quinine as cowardly and effeminate measures. Inability or refusal to take quinine should be a bar to or cause of dismissal from military service in tropical countries.

The prophylaxis of the sleeping sickness was then considered, five formal papers being read on the subject. The prophylaxis of beriberi was next considered. Dr. A. Bourguignon, physician in chief to the railway company of Kongo, at Matadi, gave an account of an epidemic of beriberi in the Kongo State, in which the susceptibility of such colored persons as were strangers to the country was apparent. He said that the prophylaxis consisted in good elevated habitations and proper alimentation. He also said there was reason to study the prophylactic action of quinine. Doctor Hebrard, major surgeon of the colonial troops at Toulon, asserted that an important preventive measure consisted in having a care that in all communities of the colored race the members are treated humanely and submitted to proper hygiene. In countries where beriberi is endemic the authorities should insist on certificates of the quality of rice and other exported provisions, their proper stowage, the preliminary cleanliness and disinfection of vessels, and absence of beriberi patients among passengers or crew. In event of an epidemic the consumption of rice should be radically suppressed, other provisions should be submitted to inquiry, the sick should be isolated and their habitations evacuated and disinfected, and rigorous rules of general hygiene should be applied.

Dr. C. L. Van der Burg reviewed the theories of the cause of beriberi, and as prophylactic measures recommended a rational alimentation, variety of food, proper ventilation; spacious, well-lighted habitations, with outhouses at a distance; avoidance of crowding, as in barracks and prisons; regular exercise of the healthy in the open air, "avoidance of excess in Bacco and in Venere," isolation of the sick in elevated regions, energetic disinfection of their habitations and apparel, prohibiting sick mothers from nursing their babes, and the building of houses of Europeans at a great distance from those of the natives.

Dr. Ch. Firket, professor of the University of Liege, said that there existed not only a disease beriberi, but also beriberis, specifically different from each other, each kind requiring a special prophylaxis. Many of the cases are due to the same causes as is the multiple neuritis observed in Europe. At other times, especially in epidemics among large numbers of persons, the malady is due to the combined action of different pathogenic agents, such as rice and dried fish. The prophylaxis of beriberi calls for the conscientious application of general hygiene. In case of an epidemic the measures to be adopted vary with the local existing etiological conditions.

The question of the prophylaxis of smallpox in hot countries was the subject of reports by Monsieur Guerin, chief of the laboratory of serums and vaccines at the Pasteur Institute, Lille, and Dr. G. Grijns, of the Geneeskundig Laboratorium, at Weltevreden. Doctor Guerin said that at the present day it was hardly necessary to express a preference for animal in contradistinction to human virus, and to condemn the dangerous practice of variolization still practiced in China. He also considered the technique of vaccine production, treating of the subjects of European and indigenous vaccine genetic centers, the rabbit as a vaccinator, as a regenerator of enfeebled vaccines, and as an intermediate animal in the preparation of vaccine of the heifer. He came to the conclusion that since the combined action of glycerin and heat manifests itself on triturated vaccine by a more or less rapid sterilization of all virulent elements it is important in practice to keep the untriturated vaccinal pustular product at a low temperature and in the least possible glycerin; that the difficulty that results in providing the colonies with virulent European vaccine renders essential the establishment of numerous indigenous vaccinogenic centers; that in these centers the rabbit can render good service as a vaccinator by reason of its sensibility to vaccine and the brief evolution in the animal of that infection, and that the rabbit becomes a valuable animal in these institutions as a control and as a certain regenerator of attenuated vaccines, making it possible to have a rabbit-heifer cycle without the intervention of glycerin. Doctor Grijns submitted a report on the question under consideration, dealing with vaccination and the technique of the preparation of vaccine virus in the Netherlands Indies. A copy of Dr. Grijns's paper accompanies this report.

In considering the question of the organization of schools of colonial medicine, papers setting forth the necessity for such teaching, outlining courses of instruction, and describing existing institutions were presented by Doctor Brouardel; Dr. V. de Glaxa, professor of hygiene of the faculty of medicine of Naples; Doctor Nocht, director of the Institute of Tropical Maladies, Hamburg; Maj. Ronald Ross, of the Liverpool School of Tropical Medicine; and Dr. W. J. Simpson, professor in the School of Tropical Medicine, London. It was decided by an affirmative vote of the section that schools of colonial medicine with dependent hospitals are useful, that they should have both an auxiliary and a native personnel, and that sea captains should be given hygienic instruction at these schools.

Second division—Demography.

Beginning its work, the division of demography examined the questions of the movements and causes of mortality, the statistics of stillbirths in different countries, and infant mortality. Papers on these subjects were presented by Dr. W. Tatham, general registrar, Somerset House, London; Monsieur Wilmart, chief of the division of hygiene, Brussels; and Doctor Prausnitz, professor of the University of Graz. In the course of the discussion Dr. Jacques Bertillon, chief of the work of municipal statistics, Paris, gave as his opinion that the large mortality of infants is due to special microbiological causes. Views were also advanced that the cause of infantile mortality is largely due to bad nourishment; that hard and unhygienic labor of women has its bearing; that false views of hygiene and lack of care for infants are also responsible; and that temperature is a potent factor. The division adopted the following resolution:

"Considering that the question of infantile mortality is of great importance for the well-being of the people and the social state of nations, and that figures are not available on which to form a basis of statistics of stillbirths, it is resolved that the division of demography recommend all governments to revise the administrative ordinances for the registration of births (comprising premature births and stillbirths), the registration to include accessory circumstances; and that it be considered the duty of statisticians, jointly with physicians, to search the records of births in order to obtain uniform lists of premature births and stillbirths."

It was also resolved, in substance, that, considering that the problem of infant mortality is a grave one among modern industrial nations, the comparative study of infant mortality should be taken up from the point of view of relative prosperity and the financial circumstances of different parts of the population, of the nature and conditions of female labor, and of the legitimacy of births.

The questions were then considered of official and uniform statistics of the causes of death, the comparative frequency of the principal causes of death in towns using the international nomenclature, the basis for correct statistics of birth, the means of determining by demography the tendencies to augmentation and diminution of births, and fluctuations in the birth rate. Addresses were presented by Dr. Wilh. Ilorth, chief of bureau of the medical department of Norway; Edm. Nicolai, director of the ministry of the interior and public instruction, Brussels; Lucien March, chief of the general statistical service of France, and Dr. Georgé von Mayr, professor in the University of Munich. These papers outlined in a detailed manner the forms in which notification should be made impressing the importance of information and reviewing the difficulties in obtaining facts.

As a result of the consideration of the topics it was resolved that there is necessity for the effective and general application of a law requiring the verification by a medical officer of all deaths; the introduction of laws enforcing physicians to give notification of the cause of deaths in their practice, and that pending the passage of these legal measures to put in force an anonymous declaration of the causes of death following on broad lines the Swiss system.

It was also resolved that inasmuch as statistical analysis by demographic abstracts is effected by analysis of homogeneous groups of figures it is necessary to be supplied with multiple details; hence, in the preparations of civil records and in the preparation of official abstracts from these records, it is necessary that full details be furnished. These records are capable of furnishing information on two important facts—first, the total fecundity of marriage, and, second, the annual fecundity.

The Congress proceeded to the study of the questions of what are the best coefficients to employ for the study of laws regulating marriages, births, and

deaths, considering particularly the objections made to a law that attributes to popular resources and needs the variations in the birth, marriage, and death rate. M. Cauderlier read a paper in which he declared his belief in a relation between birth, marriage, and death rates and the resources and needs of the people. M. Venyn-Stuart expressed the opinion that the theory held by M. Cauderlier was not of a scientific character. That it is, indeed, among the easy classes that the birth rate is lowest, and that it would appear that poverty increases the birth rate.

The study of demographic statistics of cities was then taken up, reports being furnished on the subject by M. Jacquart, chief of the general statistical bureau of the ministry of the interior and of public instruction, Brussels, and Dr. Otto Landsberg, director of the office of statistics of the city of Elberfeld. This subject, together with the questions of suicide, mental alienation, archives as a source of statistics, trade mortality, and mortality from alcoholic abuse were developed in a manner such as to make them more of local Belgian interest than of general demographic importance.

On the question of interior migrations, the depopulation of rural districts and the increased population of cities, Paul Meuriot, of Sceaux, furnished an interesting paper showing the development of suburbs, a movement that has become particularly marked in recent years in the development of London, Paris, St. Petersburg, and other European cities. The word city, said M. Meuriot, formerly implied a well-circumscribed mass of population, but nowadays a city lodges those belonging to it in a considerable number of scattered localities. This change in the grouping of populations has naturally an important demographic aspect.

EXHIBITION AND EXCURSIONS.

Annexed to the congress was an exhibition of material, literature, drawings, and models relating to hygiene and demography.

In addition to inspecting the public institutions of Brussels, the delegates were given opportunities for visiting the sanitary installations of Antwerp, the baths at Spa, the provincial sanatorium at Borgoumont, the waterworks at Waelhem (used for the purification of the Antwerp city water), the sources of water supply at Sovet and Spontin, in the valley of the Bocq, and the reservoir at Boltsford, the terminus of the aqueduct that carries water from the springs in the valley of the Bocq.

During the congress approaches were made to the United States delegation on the subject of a congress of hygiene to be held in the United States in 1909. This information was transmitted to the United States minister by Dr. Charles Harrington, of Harvard University; Maj. W. D. McCaw, surgeon, U. S. Army; Surg. S. G. Evans, U. S. Navy, and Passed Asst. Surg. J. M. Eager, United States Public Health and Marine-Hospital Service. As a result, a telegram was received from the State Department of the United States sanctioning a provisional invitation subject to future legislation. This invitation to hold a congress at Washington in the year 1909 was extended to the congress at the closing meeting by Dr. Charles Harrington, acting as speaker for the delegation.

Respectfully,

J. M. EAGER,
Passed Assistant Surgeon.

The SURGEON-GENERAL.

MEETING OF THE TEXAS MEDICAL ASSOCIATION AT AUSTIN, TEX., APRIL 26, TO 29, 1904.

Surg. H. R. Carter reports as follows:

The Texas Medical Association met on the morning of April 26, at 10 a. m. I attended three sessions per day each day except on the last day, April 29, when I was in consultation with Doctor Tabor, the Texas health officer, with reference to sanitary matters. The sections I attended were those of general medicine, four sessions; State medicine and public hygiene, two sessions; surgery, and pathology, besides the general sessions of the whole association. In the section on medicine a very suggestive paper was read by Doctor Woldert, of Tyler, on "Malarial fever and its expense to the people of Texas." Doctor Woldert had done some of the earliest work in America, if not the earliest, in the anatomy of the *anopheles* mosquito. This was done some years ago in

Philadelphia under Flexner, and he exhibited some very interesting sections, made consecutively, of this insect, both uninfected and infected, the latter being of a number of insects in different periods of infection. The species of mosquito was the *A. maculapennis*, and the work was to my mind extremely good. He laid especial stress on the large morbidity from this class of diseases in Texas and the cost of the same, saying that it exceeded that from the boll weevil and other pests against which large appropriations had been made, and urged vigorous sanitary measures against it on well-recognized lines, even if these measures should involve the expenditure of a considerable amount of money. The debate on this paper was less general than its importance should have excited.

A somewhat remarkable and very interesting paper in the same section was that of Doctor Westphal, of Yorktown, "Report of a case of malarial cystitis with parasites in the blood cells found in the urine." It would be difficult to give a synopsis other than is given by its title in a short space.

"The relation of the public schools to the medical profession," an address by the Hon. Arthur Le Fevre, of Austin, in the section of State medicine, excited, as could be judged from the number who took part in the debate on it, general interest and was an excellent paper in every respect. The same may be said of a paper by W. S. Carter, of Galveston, on the "Prophylaxis of tuberculosis." He only considered the dissemination of the disease by dried sputum, with the respiratory tract as the atrium, evidently regarding the alimentary tract and alimentary substances as of very secondary importance in this connection.

There were a number of other good papers, but these especially bear on the subject of public health. I addressed the association, as requested, on the "Conveyance of yellow fever;" was followed by Doctor Reuss, of Cuero, on "An outbreak of yellow fever in Dewitt County," and Doctor Dinwiddie, of San Antonio, on "The Laredo yellow-fever epidemic." From the debate on these three papers it is fair to judge that the subject of yellow fever was of much interest to the association and that the profession is divided in their opinions as to conveyance by the mosquito host being the only means of its natural propagation. All who were engaged in the yellow-fever epidemic of last year are subscribers to the doctrine, and it is hoped that the papers above referred to and the debate thereon were of service in convincing some of the others who did not so believe.

The association adjourned on April 29, in the evening.

The association has a membership of 2,415, which I think is as large as any in the United States, if it be not the largest.

THE CONVEYANCE OF YELLOW FEVER, BY SUBG. H. R. CARTER.

[Read before the Texas State Medical Association, April 27, 1904.]

I will say nothing of the history of my subject. It is interesting to read the many theories advanced for the causation and propagation of yellow fever, especially the arguments for its conveyance by "infected air," and its "spontaneous origin" under specified conditions. Nor is it altogether unprofitable, but the interest is speculative now rather than practical, and it would take time. I can not even take the time to give the history of the evolution of the doctrine I shall advocate, although I should like to show you how blind we were to Doctor Finlay's arguments until Reed's demonstration compelled us to see.

I propose simply to announce what I think to be the true doctrine of the propagation of yellow fever, and to give briefly the reasons for the faith that is in me.

This is the proposition, the "creed," so to speak, of the doctrine:

Yellow fever is conveyed from the sick to the well by a mosquito host, the *Stegomyia fasciata*, contaminated by feeding on the sick man, and in nature it is only thus conveyed.

It does not seem necessary to discuss the first part of this proposition, as I am sure you all accept the statement that yellow fever is thus conveyable. It is a positive proposition and thus admits of positive evidence, and that evidence is satisfactory and abundant. The American commission, of which Reed was chairman, reported, first and last, 12 cases thus conveyed; Reed and Carroll, 2; Guiteras, 8 cases; Parker, Porthier, and Beyer, at Vera Cruz, 1 case. The second party at Vera Cruz, 1 case; the Pasteur Institute commission at Petropolis, 4 cases; Ribas and his confrères at Rio Janeiro also reported suc-

cessful experiments, but I have not seen their report and do not know how many cases. Indeed, all who have tried to convey yellow fever in this manner have succeeded. I do not think, then, that any of us doubt that yellow fever is thus conveyable.

Note, please, the conditions under which this conveyance occurred in the experiments noted.

(1) A particular kind of mosquito was used—*Stegomyia fasciata*.

(2) It bit a patient in the first three days of yellow fever.

(3) It was kept a considerable time—twelve days was the shortest time—and then bit the well man.

After once acquiring the power of conveying yellow fever, for which a certain time after biting the sick man is necessary, the mosquito seems to retain the power indefinitely; at least one of Reed's conveyed yellow fever fifty-nine days after feeding on a yellow-fever patient.

Given the above conditions, yellow fever was produced with reasonable constancy. A few men, very few, were found to be immune to this method of conveyance, and not every mosquito bite conveyed yellow fever even to those who subsequently succumbed to mosquito bites.

Let us inquire into these conditions one by one and see if we can tell what are the essentials of this method of propagation of yellow fever.

(1) The kind of mosquito. So far, except one trial of *Culex pungens*, only the *Stegomyia* has been experimented with. It seems idle, then, to speculate if some other genus or species of mosquito will not also act as host. Analogy would lead us to suspect some other species of *Stegomyia* would do so, but that no mosquito not of this genus would. The genus, and this species of it, is widely distributed in hot countries. Obviously we can not exclude such species as are found in places where yellow fever does not spread when introduced. And here let us notice that if yellow fever is conveyed by only one genus or species of mosquito, then it is conveyable only where and when that particular mosquito is found and is active, and that arguments concerning its conveyance drawn from the habits of other mosquitoes are valueless unless these habits are common to the *Stegomyia* also, whose habits are in many respects different from those of other mosquitoes. Nor does the presence of mosquitoes in a place in any wise imply that yellow fever can be propagated there, unless they are *Stegomyia*. I would not state facts so obvious unless I had seen the need of it. I was asked, "How can you say that a vessel a few hundred yards offshore is safe from the invasion of infected mosquitoes when you yourself say that you have seen swarms of mosquitoes come aboard a mile out at sea?" Now, the "infected mosquitoes" are *Stegomyia*, and those that boarded me offshore were the "salt-water" mosquito—a culex, a different thing altogether.

A gentleman, an excellent physician too, asked why, if mosquitoes conveyed yellow fever, could one explain that a certain hospital where yellow fever was treated remained uninfected, "although, being close to the marsh, it was swarming with mosquitoes." There was no evidence to show that these were *Stegomyia*. Indeed, this variety is not, as a general thing, found in marshes.

(2) In all the experiments the patients were bitten in the first three days of yellow fever. Is this the limit of time during which he can infect the mosquito? You can see what a very important point it is to determine this, because, if it be true, a patient after this time can no longer communicate the disease even if bitten by a mosquito. The only experiments on this matter are those of the Pasteur Institute Commission. They injected blood from three cases of yellow fever, each one in the fourth day of the disease, into three subjects. It having been found that the disease was conveyed quite certainly by this method. None of these subjects developed yellow fever. One of them was shown to be susceptible to yellow fever by being bitten afterwards by an infected mosquito. This commission concludes from this that the power of the patients to produce infection lasts only three days. Yet this seems to me too absolute a conclusion for the number of observations made. Unquestionably the blood of these patients did not convey yellow fever, but I would prefer to see more experiments on this matter before I regard it as settled, and it is a very important one for the sanitarian—important, because we wish to isolate the patient only while infective, and if three days is the limit we will not isolate him longer; not only for his sake, but for our own. My experience has been, and I think all health officers will confirm me, that restrictive measures of sanitation, especially if domiciliary measures as well, are hard enough to carry out any way, and that the least we require, provided it be all that is necessary, the better will the work be done.

The enforcement of unnecessary measures of that kind is generally at the expense of some essential. As of old, the titling of mint, anise, and cummin leads to the neglect of the weightier matters of the law.

(3) How long must the mosquito wait after biting the yellow-fever patient before it can communicate yellow fever? How long does it take for the infected mosquito to become infective?

Now, before Reed's work in Cuba I had determined the existence of a period of time, and considerable period of time, that must elapse after the development of a case of yellow fever in an uninfected place before that place became infective. During this time yellow fever could not be contracted in this place. This period, the length of which I could only approximately determine, I had called the "extrinsic incubation" of yellow fever. I did not know the explanation, yet the knowledge of the fact was of great service to me in epidemic work. It was, of course, the time that it takes for the mosquito after biting the sick man to become infective. This time depends on the temperature, as do all of the processes of and in the mosquito—being longer in low temperature. The shortest time in which this power of conveying infection has been manifested in the experimental cases was twelve days. It was usually decidedly longer than this in Reed's experiments, most of which were in the winter. The twelve-day case was in August. It seems to be accepted that twelve days is the shortest time in which an infected mosquito can become infective, and this agrees with my own crude determination of the minimum period of extrinsic incubation, "somewhat over ten days," and yet I can not think that this has been experimentally proven. Not enough attempts have been made during hot weather with mosquitoes for less than twelve days. The determination of the minimum of this period is of interest, but not of great importance.

I am sorry to confess that we have not found the micro-organism of yellow fever, although it has been assiduously searched for both in human blood known to contain it and in the mosquito, yet some direct observations have been made on it. In the blood, at least, it exists in an ultramicroscopical form, as was first shown by Carroll working on lines laid out by Reed and himself. He found that blood serum filtered through a Berkefeld filter would still produce the disease. This was confirmed by the Pasteur Institute Commission and, in my opinion, by the working party at Vera Cruz. The Pasteur Institute Commission found that serum passed through a Chamberlain bougie B would convey infection, while that passed through a bougie F would not, thus determining within limits the size of the smallest of the infective germs. I say "the smallest infective genus" advisedly, because they may exist in the blood in different forms—as the *Plasmodium Malariae* often does—and only the small ones pass the bougie B.

It is worthy of note that the direct injections of blood and serum, filtered and otherwise, seem to differ from mosquito inoculations in the length of the period of incubation. Of 24 mosquito inoculations in normal individuals, of which the period of incubation was accurately recorded, the shortest was two hours short of three days and the longest two hours over six days, and all save these two were between three and six days. With this agrees my own observation of the period of incubation of 12 cases of yellow fever, naturally contracted, each with a single short exposure, all of which gave incubations of from three to six days. Now, in the 14 cases of blood and serum injections the time varied from one day and twenty hours to twelve days and eighteen hours, 3 of the cases being eight days and five hours, nine and one-half days, and twelve and three-fourths days. Whether there is a real difference or whether these mosquito inoculations and my observations happened to have no very long or very short periods of incubation I can not say. Only as we have 36 of these cases recorded and this is the natural way of conveying the fever, I would rather base my sanitary measures on the data from them than on the results of direct injection of blood.

The organism is very easily killed, blood heated to 55° C. for five minutes is no longer ineffective, and it soon dies in blood exposed to the air, although blood five days old covered by oil of vaseline is still infective.

So much for the positive part of our proposition, that yellow fever can be conveyed in the manner stated.

The second part of it is different in its very nature. It is a negative proposition. To say that "yellow fever is only conveyed by a mosquito host" is saying that it is not conveyed in any other way, in any one of the many other ways which might be claimed as the true one, and to proceed logically one should

examine the evidence advanced for every such way of conveyance and demonstrate its futility. There are two reasons why I do not do this: (1) Because it would be almost unending, and (2) because as I do not believe that it is conveyed in any other way, I might not state the arguments for the affirmative fairly. To demolish a man of straw of one's own make is seldom convincing. Yet I will give a few reasons why we should accept the conveyance by a *Stegomyia* host as the only means by which it is naturally conveyed. I say "naturally conveyed," meaning the way yellow fever is contracted naturally during epidemics. The disease can be conveyed, as we have seen, without the mediation of a host by the hypodermatic injection of the blood of the patient, but that surely is not a natural conveyance.

(1) Analogy. Of such diseases as have been fully investigated all that are conveyed by living hosts are conveyed naturally in no other way. This is a biological law.

Familiar illustrations are malarial fevers and Texas cattle fever, which is very like yellow fever in its epidemiology, and there are a number of diseases of the lower animals thus conveyed, and for all this law holds.

(2) The facts observed of the natural propagation of yellow fever agree with this theory and are explained by it.

For instance, the fact that the disease is not directly propagated from the sick to the well, that it is propagated only by means of an infected environment, that a man sick of yellow fever may infect his environment.

By our theory he infects the mosquitoes which bite him, and the presence of these infected mosquitoes constitutes the infected environment.

The existence of infectible and noninfectible places.

An "infectible" place, as you know, is one which, if cases of yellow fever be introduced therein, becomes infected, i. e., capable of inducing yellow fever in those who visit or live there. A "noninfectible" place is one which will not become infected even if cases of yellow fever be introduced. In such a place yellow fever is not a transmissible disease. The theory of conveyance by a host would explain this difference by the presence of the proper host (*Stegomyia fasciata*) in the one and its absence in the other.

The relation of the spread of yellow fever to cold weather, altitude, and excessive dryness. The very conditions under which this mosquito, mind you I do not say "mosquitoes," thrives best suit the propagation of yellow fever.

The close correspondence of the periods of incubation from infection in the natural way—12 cases observed by myself—with the periods of incubation after mosquito inoculation, 24 cases. Yellow fever caused by the hypodermatic injection of blood or strained serum from a yellow-fever patient has not shown the same agreement in its period of incubation with that naturally contracted. It may be because this is not a natural method of conveyance.

The existence of a considerable interval, seldom under two to two and one-half weeks, between the infecting and the first "secondary" cases of yellow fever. I mean that when a case of yellow fever contracted elsewhere develops in a noninfected place no case will develop from the first one until after about two weeks, and that then we are apt to have a considerable number together as our first crop. Now this time is decidedly longer than the period of incubation of yellow fever, and since it is an invariable phenomenon it can only mean that the place requires a certain time after receiving infection from the sick before it becomes capable of inducing yellow fever in others. This of course is the "extrinsic incubation" we have spoken of before, and its usual minimum duration, which had been fixed by observations of yellow fever naturally occurring as "somewhat in excess of ten days," the first secondary cases usually occurring in the third week, is too close to the period, twelve days as a minimum, which Reed observed between the date of the feeding of the mosquito on the yellow-fever patient and the date on which yellow fever was conveyable by the same insect for those periods to be due to different causes. That cause in Reed's cases was the incubation in the mosquito. The same phenomenon is observed with malarial fever, i. e., a certain time must elapse from the infection of the *Anopheles* by the ingestion of the plasmodium mal before it is capable of producing the disease in those whom it bites, and so with other diseases caused by parasites conveyed by living hosts.

Indeed this phenomenon and the fact that some places are infectible and some not infectible by a yellow-fever patient, with no reason which we could assign for the difference, are, taken together, scarcely capable of any other explanation than conveyance by the host.

Indeed, I do not know one single fact established concerning the natural propagation of yellow fever which does not agree with the doctrine of its conveyance by the *Stegomyia fasciata* as a host.

(3) Measures founded on this doctrine have given the results which were to be expected of them if it were true. And this I hold to be most convincing evidence.

In 1899 and 1900 "campaigns of cleanliness" were waged against the yellow fever in Habana. All the money that could be called for was forthcoming, and all the men. Skilled engineers were in charge with the whole force of military power behind them. In 1899 General Ludlow was in command and Major Davis was chief sanitary officer; in 1900 it was General Wood and Major Gorgas. And I can give you my word that the work was well done. Habana was as clean as a cobblestone-paved city can be kept. We begin, too, with a city almost free from yellow fever. There had been but 31 deaths from yellow fever among civilians the year ending March 31, 1899, and there were only 5 more to August 1. The fever then spread, and we had that year to March 31, 1900, 111 deaths among the civil population; less than normal, but just the same number as in 1885, when no sanitary measures were used. In 1900 the work was probably better organized and was certainly as well done, yet the deaths that year were 301, although this includes some among the military, say 12 or 15. The average civil death rate from yellow fever in Habana for the ten years prior to the war was 211 per annum. We had, then, this year more deaths among the civil population than normal in Spanish times—nearly one-third more. Indeed, 1900, after all our work, gave a higher civilian mortality than any one of the ten years prior to the war except 1893. Now, during this time Habana was as clean as it could be made. Patients were isolated to some extent; all moved to hospital whom we could get to go, probably 75 per cent, and the premises carefully washed down with bichloride of mercury, and the fabrics disinfected by steam or bichloride or boiling. Yet, as I tell you, we had an epidemic. So far as yellow fever was concerned, the sanitary work was a failure. The next year, the plan was changed. The *Stegomyia* was accepted as the only means of conveying yellow fever and all effort was based on this belief. All cases of yellow fever were screened as soon as found, and they were found early and the screens were kept in place, too. If the patient went to hospital the house was immediately fumigated with either pyrethrum or sulphur. If he did not it was screened and fumigated as soon as possible, the houses adjacent being also fumigated. This was the key of the plan:

(1) To keep mosquitoes from the patient.

(2) To kill all mosquitoes which had had access to him.

There was also a general war waged against all mosquitoes in town, draining and oiling pools of water; emptying, covering, or oiling water in containers. The presence of mosquito larvæ on premises was made a public nuisance and punished by fine.

These measures unquestionably did good and there was certainly a tremendous fall in the mortality in all malarial fevers, but the essential of the work for yellow fever was, as I have said, to keep mosquitoes from the patient and to kill those which had had access to him. Nothing else was done. The bedding and clothing of the sick were not touched, nor the bedding and clothing in the houses where they were taken sick.

Now the result.

Yellow fever disappeared. There were about the usual crop of cases in the spring, but there was no spread. Some were introduced from Santiago de la Vega and other places outside of Habana, but there was no spread to amount to anything. Cases, a few, were brought on the vessels from Vera Cruz, taken to the yellow fever hospital and screened, and there was no spread. Gentlemen, this was not luck. It was not accident. Habana had had yellow fever for one hundred and forty years. It was freed from it in the summer of 1901 by the measures taken.

I am glad that the same man, Doctor Gorgas, had charge of the sanitary work in both 1900 and 1901, so that everything should be the same except the plans of the work and the difference of the results—in 1900 a failure, in 1901 a brilliant success. Could this have happened had there been any other means of conveying yellow fever except the insect host? What else will screens exclude? What else will insect powder kill? Remember the bedding, clothing, etc., of the patients were not touched.

There has been no yellow fever in Habana since; that is, none contracted there. You know that Habana is in weekly communication with Vera Cruz

and other Mexican ports, receiving a considerable number of passengers by each vessel. How has she kept infection from being introduced from these ports? There is a maritime quarantine at Habana just as at all seaports among civilized nations. As Doctor Flulay directs it for yellow fever it is naturally based on the *Stegomyia* being the only agent of conveyance of that disease to man. Passengers not immune to yellow fever are retained in quarantine across the bay five days from their last presumable exposure to yellow fever before they are allowed to enter the city. Vessels which may be infected with yellow fever, i. e., which may have infected *Stegomyia* on board, are not allowed at the wharves or to be boarded by nonimmunes until after fumigation to destroy mosquitoes.

Baggage of all kinds from Vera Cruz, Tampico, and Merida, even that of people sick of yellow fever, is passed without disinfection.

People arriving with yellow fever are taken at once in an ambulance screened with mosquito wire to the yellow-fever hospital. This is a ward screened and with double screen doors in the general hospital in the city of Habana. A number of such cases have been thus treated and there has been no spread. No spread was expected by those in charge, and I venture to promise that there will be no spread as long as the present system is carried out.

Look at this quarantine! With passenger traffic, the most dangerous kind of traffic from infected ports, with its protective measures directed only against mosquitoes, with absolutely no disinfection of baggage, and yet giving a perfect result.

The same regulations have been in effect at a number of our southern ports—those of Virginia, North Carolina, Georgia, Florida, and Mississippi—the past year, for the United States regulations are also based absolutely on this doctrine, and require only what is given above, and with the same result. Could this be if yellow fever were conveyed in any way except by an insect host? Could it be if fomites could convey yellow fever?

Fomites! A while ago I said I knew of no fact in the propagation of yellow fever which was not consistent with the doctrine of its propagation by a host. I am sure some of you thought of "fomites" then. I promised not to set up a man of straw and demolish him, and yet, as I used to believe in this means of conveyance myself, it may be that the arguments which convinced me that I was wrong may have weight with some one who believes as I did. Obviously, if yellow fever can be conveyed by fomites the doctrine that it is only conveyed naturally by a mosquito host is untrue.

I believed it, the conveyance by fomites, (1) from the analogy with other infectious diseases—smallpox, measles, etc.—and (2) because everyone else did. The doctrine was not disputed, and I did not examine the evidence for it critically. Yet even before Reed's first paper, I had come to rather more than doubt—almost to disbelieve—that fabrics conveyed yellow fever, although I knew that ships did. My mind was not changed simply to accept this theory. In the first place, for all the yellow-fever outbreaks which I myself could trace, a man sick of yellow fever was the starting point. There were many which I could not trace. In some such outbreaks fabrics from infected places had come in, and in the vast majority no such fabrics could be traced. None of the reported cases of conveyance by baggage which I could personally investigate excluded other means of conveyance.

Then I found that for the twenty years preceding 1899 the baggage from Vera Cruz, Habana, and Santiago de Cuba on vessels arriving at New York, unless with yellow fever en route, entered without disinfection. The amount of this baggage from Habana and Vera Cruz was large and it was not possible but that much of it came from houses infected with yellow fever, and much of it was not clean. All of this baggage was presumably opened at the custom-house at New York, and it was opened at hotels there and at Saratoga, and no yellow fever was reported among the customs inspectors in New York or at the hotels during this time.

The baggage going from the same ports to Spain for the twenty-nine years preceding 1899 was even more to be considered. Its amount was enormous. Much of it must have been foul. Yet no yellow fever was reported in the Peninsula since the epidemic of 1870.

Of course, negative evidence is convincing only in proportion to its mass, and that a piece of baggage, or 100 pieces of baggage, from an infected place did not convey infection to those exposed to it means little, yet the amount of this baggage was so large—I can not estimate it at less than that of 300,000 persons from Habana alone, not to count Vera Cruz and southern Cuba—that we must claim

that a very large amount of baggage from infected houses had been introduced into New York and Spanish towns; that numbers of susceptible people had been exposed in these places under various conditions, but had not contracted yellow fever.

To me the mass of this evidence was sufficient to be convincing, and I counted it proven that baggage from Habana and Vera Cruz would not convey yellow fever to people in New York or Spain. Nor could I say that baggage does not convey yellow fever in New York or Spain, but it will do so in the South. I knew that yellow fever was communicable from a sick man only by infecting his environment, and hence only in an "infectible locality," but the contrary had always been the teaching for fomites. That infection could be directly conveyed to man by fomites is the doctrine which had been universally taught. All the instances reported of conveyance by fabrics of which I had cognizance were either explicitly ascribed to, or explicable by, this direct conveyance. Now, if the "infected" fabrics could convey yellow fever directly to men, obviously they would convey it to susceptible people who come into direct contact with them in any place, whether the locality be "infectible" or "noninfectible." Therefore, as against the possibility of direct conveyance of yellow fever from fabrics to men, the data from New York and Spain which I have given above, if conclusive for those places, were conclusive against such conveyance in places known to be "habitually infectible."

As to the positive instances of conveyance by baggage, which had been reported, none that I was able to inquire into personally certainly excluded other methods of conveyance. The reporter begins with the assumption that yellow fever is conveyed by fomites, and as soon as he can show the introduction of fomites from an infected place he is satisfied. He looks no further for any other source of infection. Strange to say, the best-attested cases I came across were not those of conveyance by packed baggage, but by clothing worn on the person, sometimes for a number of hours, through the sun and air, which was against all other experience of this disease.

Also, it is common sense that when there is a great mass of negative testimony on a subject all tending one way, we may not accept a moderate amount of positive evidence in rebuttal unless its data be conclusive, and I thought the evidence of the Cuban and Mexican baggage great enough for this rule to apply.

Note, too, that the argument for conveyance by fabrics was really a negative one. The reporter says "there was no possible source of infection except the fomites." He means that he knows of no other. Exactly the same argument was used, and logically, for the spontaneous origin of yellow fever. Cases were cited for which no exposure to any source of infection could be made out, and the statement was made that there was no exposure. From this, if admitted, the admission of the "spontaneous origin" of the cases was a necessary consequence. These cases were (indeed are) not a few. They were reported with as much detail and with as much care and by as good men as those for which no exposure except to fomites was known. The argument for the spontaneous origin of yellow fever and that for its conveyance by fomites both depend on our accepting that there were no exposures unknown to the reporter. They stand or fall on the same class of evidence.

As to the cases of infection carried by clothing worn on the person, which I have said seemed the best attested of all I had cognizance of, I knew that a large number of passengers had been coming during all seasons of the year from 1888 to 1898, ten years, from Habana to Key West and Tampa with no disinfection of the clothing they were wearing, and yet Key West and Tampa had kept free from yellow fever. It was not possible that the thousands who thus came over should have carried no infection if clothing worn on the person could carry it. There must then be some other explanation for the few cases reported in the United States. I think, then, that I was right on this evidence to count the conveyance by fabrics as "not proven."

If, in addition, I had had what you now have:

(1) The experiments of Reed, of Ross, and of the Pasteur Institute Commission.

In these a number of persons were exposed for days and nights to bedding and clothing used in every conceivable way about yellow-fever patients. None of these people developed yellow fever from exposure, although a number of them did when subsequently bitten by contaminated mosquitoes. To be fair, I wish to admit here that the fact that Reed's experiments with fomites were done late in the year detracts from their value. This, however, does not apply to the other two.

(2) The freeing of Habana from yellow fever by Gorgas, although the clothing and bedding were not disinfected.

(3) The continual experiment which the Habana quarantine and many of our own stations have been giving us in letting in baggage from yellow-fever ports without any disinfection, and yet with no introduction of yellow fever.

Note that in these last two the fomites which did not convey infection were in infectible places in the yellow fever season.

If, I say, I had had all this evidence in addition to that which convinced me, I would, I think, scarcely have considered conveyance by fomites worthy of discussion. And that whether I knew of any other method of conveyance or not.

Let us see what we have said.

There is no question in any man's mind that the mosquito *Stegomyia fasciata*, acting as a host, does convey yellow fever from the sick to the well. That this is the only method of conveyance, the argument is:

(1) The analogy of other diseases conveyed by living hosts.

(2) That the facts observed of the natural propagation of yellow fever agree with this theory.

(3) That measures based on this theory have given the very results which they should have given if the theory were true.

(4) No other natural method of conveyance is proven.

CEREBRO-SPINAL MENINGITIS IN HARTFORD, CONN., MAY 25, 1904.

Passed Asst. Surg. John F. Anderson reports to the Surgeon-General as follows:

I have the honor to report, in obedience to Bureau letter of May 20, 1904, directing me to proceed to Hartford, Conn., and give expert assistance in the diagnosis and management of epidemic cerebro-spinal meningitis, that I arrived in Hartford on the evening of the 21st and called on Dr. Gideon Segur, secretary of the city board of health, and explained the objects of my mission.

A meeting of the board of health was called for that afternoon, at which I was invited to be present, and a general discussion of the epidemic was had. There seemed to be a unanimity of opinion of the doctors present that there could be no question but that the disease was epidemic cerebro-spinal meningitis.

The meeting was adjourned to the laboratory of the board of health, where I was invited to examine slides and cultures from cases of the disease. The next day, Sunday, in company with members of the board of health, I visited several cases in private families and saw 3 cases in the Hartford City Hospital, also witnessing there two post-mortems. I was shown cultures and slides made from cases in the hospital, all of them being from undoubted cases of meningitis. The remainder of the day was occupied in visiting cases in private families.

Monday the same programme was followed out as on the previous day.

About one month ago the Hartford city board of health passed a resolution making cerebro-spinal meningitis a quarantinable disease. When a case occurs in a house the house is placarded, the children in it are quarantined and remain from school, although those working are allowed to pursue their usual occupations. In case of death the body is wrapped in a bichloride sheet and buried as soon as possible, the funeral being private. Upon removal of the body the place is disinfected, chlorine gas being used. This method of disinfection has been practiced almost exclusively in Hartford for a number of years, and I was informed by the bacteriologist and by the secretary of the board of health that they regard it as being efficient and saw no reason why a change in methods of disinfection should be made.

As showing the etiological relation of the *Diplococcus intracellularis*, the following data were kindly given me by Doctor Steiner, pathologist of the city hospital, and are of interest:

Of 20 cases examined by lumbar puncture 17 showed the presence of an intracellular diplococcus decolorizing by Gram's. Seventeen attempts were made to grow the organism, being successful in 13 cases. Cultures from the blood were made in 5 cases, in one of which the organism was recovered. This last point is of special interest, as there are very few instances in the literature reporting the recovery of the organism from the blood.

Since April 4 there have been 73 cases of the disease in Hartford with 51 deaths. The diagnosis is in doubt for some of the recovered cases. Twenty-

four cases were admitted to the Hartford City Hospital, of which number 20 have died, giving a mortality of 83 per cent.

A marked feature of this epidemic is the suddenness of the onset of severe symptoms and early death of those who succumbed to the disease. In many instances death occurred within thirty-six hours from the onset.

While the disease has occurred in persons from 1 year old to 65 years, the majority of cases were in persons under 25 years; over half of the cases being in persons under 15 years of age. The disease seems to be chiefly confined to persons living under rather unfavorable sanitary conditions, few or no cases having occurred in the better class of people.

The secretary and the president of the board of health expressed their appreciation of the prompt detail of an officer to Hartford. I am indebted to Doctors Segur and Miller, of the city board of health, for courtesies, and to Doctor Wolf, bacteriologist of the board of health, for specimens and cultures and other courtesies; to Doctor Steiner, pathologist at the Hartford City Hospital, for slides, cultures, and sections, and to other physicians who so kindly showed me their cases.

On my return journey I stopped in New Haven and called upon Dr. C. A. Lindsley, secretary of the Connecticut board of health, who expressed his thanks for your kindness in sending an officer to Hartford.

INSANITARY DWELLINGS AND THE REHOUSING PROBLEM IN FOREIGN CITIES.

In view of the importance which these problems are assuming in various cities of the United States, and the importance of the problem from a public health point of view, it was deemed advisable to profit as far as possible by the experience of foreign cities, in many of which the varied questions involved have been under consideration for a number of years.

Through the Department of State the aid of United States consular officers was invoked, and the following circular requesting information was issued by that Department.

In response much information of value and of a varied character has been furnished the Bureau, and the reports and documents transmitted are being reviewed and abstracted in a shape for future publication.

TREASURY DEPARTMENT, *November 19, 1903.*

SIR: I have to request that, if practicable, a letter of inquiry be addressed to the United States consular officers in the following-named cities directing them to obtain and forward, for the use of the Public Health and Marine-Hospital Service, the laws or regulations requiring the vacation of insanitary dwellings and the laws or regulations requiring the demolition of such buildings; also to obtain and forward information concerning what provision, if any, is made in the various cities for reimbursing either the tenant for vacating or the owner for the demolition of the houses.

The cities from which this information is desired are as follows:

London, Liverpool, Manchester, Birmingham, and Leeds, England; Glasgow and Edinburgh, Scotland; Belfast and Dublin, Ireland; Paris, Marseille, and Lyons, France; Berlin, Hamburg, Munich, and Leipzig, Germany; Vienna and Budapest, Austria-Hungary; Amsterdam and Rotterdam, Holland; Madrid and Barcelona, Spain; Lisbon, Portugal; Naples, Rome, and Milan, Italy; Copenhagen, Denmark; Stockholm, Sweden; Christiania, Norway; St. Petersburg, Moscow, Warsaw, and Odessa, Russia; Constantinople, Turkey; Bucharest, Roumania; Rio de Janeiro, Brazil; Buenos Ayres, Argentina; Montevideo, Uruguay; Calcutta, Bombay, and Madras, India; Melbourne and Sydney, Australia; and Montreal and Toronto, Canada.

Respectfully,

L. M. SHAW, *Secretary.*

The honorable the SECRETARY OF STATE.

[Circular.]

INSANITARY DWELLINGS.

DEPARTMENT OF STATE,
Washington, November 30, 1903.*To certain consular officers of the United States:*

GENTLEMEN: At the request of the Treasury Department in a letter of November 19, 1903, you will please obtain and forward for the use of the Public Health and Marine-Hospital Service the laws or regulations of the cities in which you are respectively located requiring the vacation of insanitary dwellings and the laws or regulations requiring the demolition of such buildings.

You will also report what provision, if any, is made for reimbursing either the tenant for vacating or the owner for the demolition of the houses.

I am, gentlemen, your obedient servant,

HERBERT H. D. PEIRCE,
Third Assistant Secretary.

The foregoing contains the report of the transactions of the division for the fiscal year.

Respectfully,

H. D. GEDDINGS,
Assistant Surgeon-General.

The SURGEON-GENERAL.

MISCELLANEOUS DIVISION.

(INCLUDING CONTRIBUTED ARTICLES AND NECROPSY REPORTS.)

REPORT OF THE MISCELLANEOUS DIVISION.

By A. J. McLAUGHLIN,

Assistant Surgeon, Public Health and Marine-Hospital Service, in charge.

SIR: I have the honor to submit herewith the following report upon the work of the miscellaneous division for the fiscal year ended June 30, 1904.

Four hundred and sixty-five papers, referred to the Surgeon-General for opinion by the General Superintendent of the life-Saving Service, were acted upon by direction of the Surgeon-General. These papers called for an opinion upon the medical evidence submitted in claims for benefits under the act of May 4, 1882, or upon cases of rejection of candidates for enlistment or reenlistment.

The correspondence work of the division included supervision of all correspondence relating to requests for Service publications; supervision of correspondence of a miscellaneous character, such as could not properly be referred to any other Bureau division; making necessary replies; acknowledgments of books and publications donated to the Service library.

All books destined for the Service library were received and cared for. The medical journals subscribed for or received by the Bureau were read, and all articles upon matters affecting the Service, upon the communicable diseases, and upon matters relating to hygiene and the public health were marked for the notice of Bureau officers. A card index was made from the articles so marked and sent with the journals, after they had been seen and checked by the Surgeon-General and all chiefs of Bureau divisions, to the division of scientific research for filing.

The necropsy reports sent in from the various marine hospitals during the year were edited and prepared for publication in the annual report of the Surgeon-General. A classified table of surgical operations performed during the year at marine hospitals was compiled from the annual reports of surgical operations (Form 1925) and prepared for publication in the Surgeon-General's annual report.

To facilitate the work of editing necropsy reports and preparing the table of surgical operations for the annual report, the following circular letters were prepared and sent to all medical officers of the Service:

[Circular letter.]

TREASURY DEPARTMENT,
BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,
Washington, D. C., September 30, 1903.

To Medical Officers Public Health and Marine-Hospital Service:

Attention is called to paragraph 696, Revised Regulations Public Health and Marine-Hospital Service, 1903, in relation to necropsy reports. These reports should be typewritten, as required in this paragraph, on ordinary legal-cap paper, and not on thin linen paper ordinarily used for carbon copies. They should be sent to the Bureau as soon as completed, and unnecessary delay in completing the necropsy report should be avoided.

It should be borne in mind, in making these reports, that they are primarily necropsy reports, and a careful systematic report of the necropsy findings should be made. In necropsy reports the history should always be subsidiary to the necropsy findings, and only such facts in the patient's family or personal history which have a direct bearing on the cause of death should be related. The clinical history should contain important facts in connection with patient's illness and death, but these should be concisely stated and all unnecessary details omitted.

Whenever the patient's history contains remarkable features, necessitating a lengthy statement of an interesting character, the history of the case should be sent as a special contributed article, the necropsy findings being then subsidiary to the unusual or interesting clinical history of the case.

Respectfully,

WALTER WYMAN, *Surgeon-General.*

Considerable embarrassment has been occasioned by the limited editions of Bureau publications permitted by existing law. The demand for bulletins of the Hygienic Laboratory and for bulletins of the Yellow Fever Institute so far exceeds the supply, which is limited to 1,000 copies in any fiscal year, that the refusal of many requests for these bulletins was necessitated. The edition of the annual report of the Surgeon-General, which is limited to 2,500 copies, is also inadequate to meet the demand.

These requests for publications come from every part of the country from reputable physicians and sanitarians, whose letters indicate the value and importance of the publications requested. It is a matter of regret that it has been necessary to refuse many of these requests, and an effort was made to obtain relief by Congressional action.

The following joint resolution was introduced in the Senate and passed by that body during the last session, and is now in the House of Representatives, where it is awaiting action by the Committee on Printing:

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That there be printed each year the Public Health Reports, bulletins, and other special publications of the Public Health and Marine-Hospital Service of the United States, to be distributed by the Surgeon-General, in such editions as the interests of the Government and the public may require; and that there be printed each year twelve thousand copies of the Annual Report of the Surgeon-General of the Public Health and Marine-Hospital Service of the United States, five thousand copies for the use of the House, two thousand copies for the use of the Senate, and five thousand copies, bound in cloth, to be distributed by the Surgeon-General.

In view of the limited size of the editions, a system was devised and instituted whereby a penalty postal card, addressed to the Surgeon-General, was sent out with each publication and the recipient requested to acknowledge receipt by signing the card and mailing it to the Surgeon-General. Failure to sign and return the card was taken to indicate either that the bulletin or report was not delivered or that the publication was no longer desired. By means of this postal-card system it has been possible to keep the various mailing lists reasonably clear of incorrect addresses and names of those deceased or removed.

Following are articles contributed by officers of the Service for publication in the annual report, and reports of fatal cases, with necropsies, received from the various stations.

Respectfully,

A. J. McLAUGHLIN,
Assistant Surgeon in Charge.

CONTRIBUTED ARTICLES.

CHRONIC PANCREATITIS WITH INDURATION.

By Asst. Surg. L. P. H. BAHRENBURG.

A perusal of the available literature on the subject of any pancreatic disease reveals an unfortunate paucity of definite signs which may be directly attributed to disease of this organ. This is clearly shown by the fact that in so extensive a work as the Twentieth Century Practice of Medicine 24 pages only are devoted to them, inclusive of a brief bibliography.

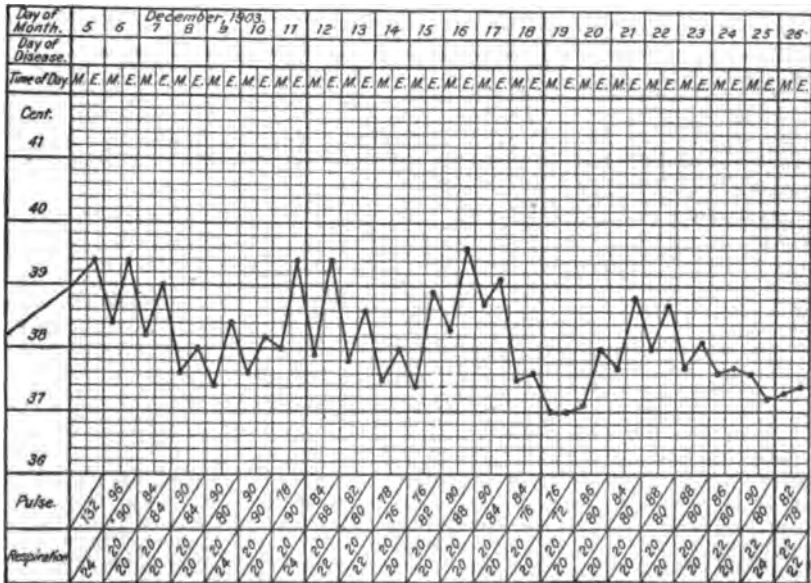
All writers seem agreed that chronic fibrous pancreatitis is an uncommon pathological entity. Leo, in Volume VIII of the work just mentioned, says:

As chronic inflammation of the pancreas occurs only exceptionally as an independent disease, being as a rule a secondary affection, there are no characteristic symptoms. A diagnosis of the disease is therefore impossible. * * * From the fact that a diagnosis is impossible, there is nothing to be said as to treatment.

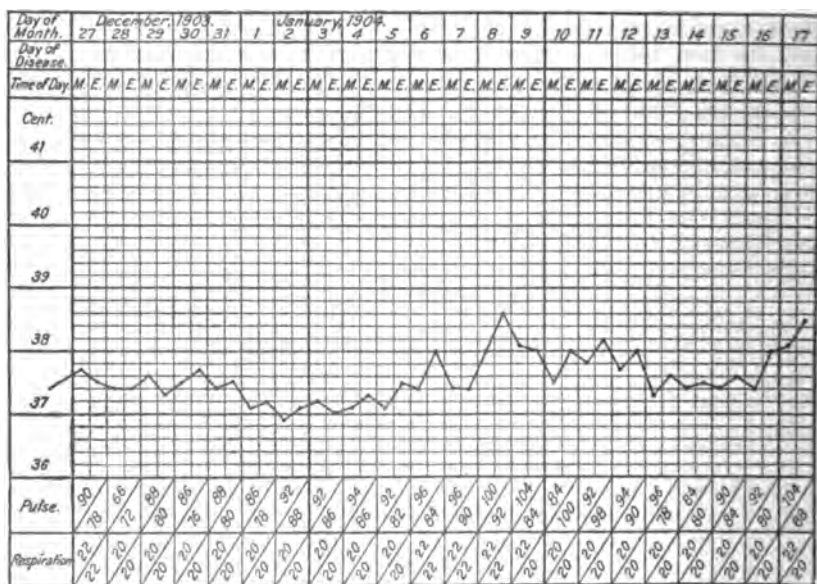
Such a statement by an acknowledged authority on internal medicine is ample evidence of the necessity that no observations made in these cases should be permitted to suffer loss, but that they should, on the contrary, be made accessible to others for reference and comparison. On this account it has seemed expedient, despite its incompleteness, to report the following record of a case which came under the observation of the writer:

C. R., a white; age, 43; born in Michigan; admitted to the United States Marine Hospital, Chicago, Ill., December 5, 1903, and died February 16, 1904.

FAMILY HISTORY.—Good, as far as known to the patient.



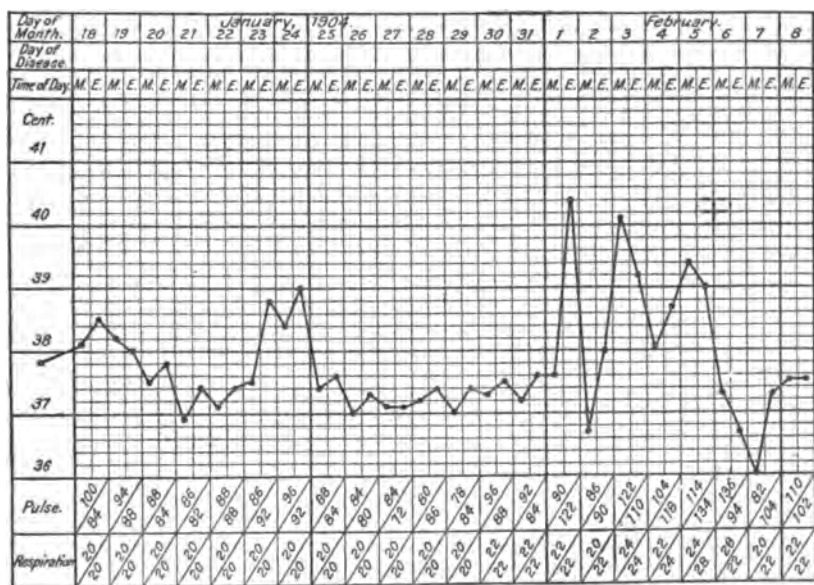
PERSONAL HISTORY.—The patient said he had never before been ill; had had two attacks of gonorrhea, the last about eighteen months ago. About two weeks before admission to this institution the left inguinal lymphatics became swollen and painful; he entered the hospital to be treated for this, and the condition promptly subsided under treatment. Patient stated that about one month before admission his left auricle became swollen to twice its natural size, was painful only upon pressure, and there was no discharge from the ear nor earache. On December 7 he complained of aching of the muscles of the nucha, headache, and rather free perspiration. The next day he felt better, but a slight icteric tinge was noticed in the conjunctivæ. From this time until December 25 his temperature assumed a peculiar periodical undulation, ranging between 37° and 39.6° . During this time there were no subjective nor objective symptoms except occasional occipital headache, gradual loss of strength, and momentary dizziness. During the next two weeks the temperature remained normal and the patient seemed to be improving. Physical examination had always proved negative. About this time (January 7, 1904) the temperature curve again became somewhat undulating, but not with so high a maximum as before, ranging between 37° and 38° . He now began to complain of fermentative indigestion, with gaseous eructations and sensations of weight in the epigastrium. On January 14 he complained of a "fluttering sensation around the heart" and slight dizziness. Pulse was 80, occasional intermissions were noted, but no cardiac murmurs were present.



On January 17 the patient reported having pains in the occiput and dizziness. On January 19 a number of bright pink macules, ranging in size from a split pea to a silver quarter suddenly appeared upon the dorsum of both hands; they were neither elevated above the level of the skin nor sensitive, were irregular, in outline, and confined to the distal half of the dorsum of the hands; they disappeared during the night of the 21st. On January 23 the patient complained of colicky abdominal pains, felt chilly, and his temperature rose to 38.8° . The next day the patient reported that he had fainted and fallen to the floor while out of bed during the night; this had been preceded by a sudden sharp pain in the left iliac fossa, which continued several minutes after he had regained consciousness. Examination elicited nothing beyond slight swelling and tenderness of left spermatic cord, and on January 26 the patient said he felt quite well again. Two days later the patient was allowed to sit out of bed and was apparently improving daily. This continued until 1 p. m. on February 1, when the patient was suddenly seized with a sharp chill, followed by a high temperature, pains in the head, nucha, back, and epigastrium; he had a rapid, full, bounding pulse, and injunctive conjunctivæ.

On the following morning the temperature was 36.7° , and all subjective symp-

toms had disappeared. During the night a number of erythematous maculæ appeared upon the dorsum of both hands (one being about 2 cm. in diameter), elevated and itchy, but not painful. At 5 p. m. a moderate chill occurred, and his temperature rose gradually to 40.1° by morning (February 3). During the night he had had meteorism, with sharp intestinal pains, which yielded readily to counter irritation. The tongue had a pasty, white coating, the conjunctivæ were injected, and the patient had headache. Toward evening these symptoms abated, but the next morning (February 4) another sharp chill was followed by hyperpyrexia, and later profuse diaphoresis. At 3.30 a. m. (February 5) he vomited, and had a sharp chill and high temperature; general hyperesthesia of the skin was his only subjective symptom. A sudden fall of temperature to 36.3° in the afternoon was similarly followed by a pronounced chill and rise of temperature. Despite this the patient said he was quite comfortable at 6 p. m. He had a slight chill the next morning, and this recurred at 10 p. m., when he reported severe general abdominal pains, which required the exhibition of morphine sulphate hypodermatically. Slight delirium was noticed occasionally on this day. At 8.45 a. m. (February 7) his temperature was only 35.7°; hot water bottles were applied, and a few minutes later the patient had a slight chill. At 9.30 a. m. he complained of only moderate headache. This proved to be a very comfortable day for the patient, although he was perspiring freely. Slight general icterus was noticed on this day.



On February 8 jaundice was very marked; the conjunctivæ were deeply icteric and congested. The stools had been quite light-colored for several days, which had been attributed to the use of milk as his only diet. During the night he had another attack of acute pain, sharpest in the right lumbar region, but darting through entire right side of body and head, and requiring a hypodermatic injection of morphine sulphate 0.015 gram. On February 9 the icterus was intense; physical examination elicited some tenderness over the gall bladder, but was otherwise negative. The bowels were moderately loose. On February 10 the patient had a slight chill at 7 a. m.; the icterus had deepened into a dusky bronzed yellow; the tenderness had increased over the gall bladder and extended over the right lobe of the liver, which now projected 3 cm. below the costal arch. Depression of spirits, noted for several days past, now amounted to despondency. Near midnight the patient had an attack of very sharp pain in the right vertex, necessitating an injection of morphine sulphate. On the 12th he had a slight chill, with temporary retention of urine. Upon being questioned patient reported that there had been some dribbling of urine for several days. In the afternoon he had complete retention, and deeply bile-stained urine was drawn by catheter. On the 13th the patient had an involun-

LEPROSY IN THE SULU ARCHIPELAGO.

By Asst. Surg. J. W. AMESSE.

So many pages of Moro history have been written with the point of the sword that a digression in more peaceful vein may not be out of place at this time, when the nucleus of civil government is forming and the advent of so many people wholly unfamiliar with the country is expected.

I have chosen the subject of leprosy because it is an indigenous disease and no insignificant member of that endemic plague trinity of which dysentery and malaria have furnished such world-wide study.

The notes have been obtained from careful observation extending over a period of five months, during which time a number of the larger islands were visited, and from personal interviews with many representative Moros from various parts of the archipelago.

Unfortunately, political differences between our Government and the natives, increasing as it did their inherent distrust of the white man and his inevitable notebook, prevented in some instances that freedom of communication so essential in investigations of this kind, but it is believed that sufficient reliable data were obtained to be of use when the ultimate question of segregation presents itself.

It would be strange if even a disease so difficult of communication as leprosy did not flourish in these islands once a focus had been established.

Meteorological conditions, the squalor and general wretchedness of the natives, crowded together in vile single-roomed huts, their half-clad bodies disclosing a protean array of dermatoses, all contribute to the growth of the specific organism and the transmission of the disease.

Leprosy has existed in the Sulu group since early in the eighteenth century and before the arrival of the Chinese, though these "pig-tailed argonauts" have doubtless been an important factor in its dissemination since their trading centers were established in 1755.

It is easy to believe the first cases were carried here by Moro pirates, who ravaged the entire Philippine coast for centuries and frequently returned to rendezvous in these waters. Even at Manila, Foreman tells us, Musselman corsairs were feared as late as the year 1800, and at that time Luzon had been a center of infection for more than one hundred and fifty years. It is also probable that Javanese lepers, escaping from their own country, where lazarettos were in vogue as early as 1657, established themselves in neighboring islands and contributed to the infection of Sulu.

Later on, when the Spanish Government founded penal colonies in the neighboring island of Mindanao and garrisoned its outposts with

Tagalog and Visayan soldiers recruited from provinces where leprosy was common, numerous cases appeared among the Filipinos, but at no time was segregation of these unfortunates attempted.

The subjoined history of one of these cases well illustrates the indifference manifested by these exiles toward all sanitary matters—an apathy now bearing rich fruitage in the enormous mortality from tuberculosis, syphilis, and enteric disease. From all the sources of information accessible at this time it is believed there are 350 lepers in the Sulu group, which, allowing these islands a population of 85,000, implies a ratio of 4 to 1,000. This proportion is lower than that found in the Hawaiian Islands, New Caledonia, British North Borneo, or Java, but is much greater than the percentage in India, where leprotics are segregated in suitable asylums.

Both forms of the disease are recognized by the Moros under the general name "epul," the anæsthetic type being considered non-contagious and its victims allowed to live out their lives with the family, while the exudative or tuberculous form is looked upon as the most baneful disease that afflicts the race. Their views on its etiology are at once interesting and puerile, colored as they are with the vein of superstition that pervades their entire folklore and daily life. They believe (1) that leprosy can originate *de novo* from the rough sorcery or the enchantment of some enemy; (2) that it may follow continued and intimate association with one already stricken with the tuberculous form; (3) from a fish diet, especially when restricted to one species known among the Moros as the "ty yook."

The theory advanced by the distinguished leprologist, Jonathan Hutchinson, whose convictions concerning this factor in the etiology of the disease have recently been strengthened by further research in India, would find many earnest advocates among these primitive people.

In the island of Panducan, 25 miles northwest of Jolo, there are 15 lepers in a population of about 400; these people subsisting almost exclusively upon sea food, preferring always to eat it dried and uncooked.

While it is recognized that until the chain of evidence is complete and the bacillus of Hansen demonstrated in the food itself such observations as these can be of but subsidiary value to medical science, the fact is strongly borne in on one that here we may find the solution of the question.

Another reason (4) assigned for the presence of sporadic cases is the visitation of divine wrath following certain personal pollutions forbidden by the Koran with even greater emphasis than are similar transgressions in the Bible of the Christians.

TREATMENT.

As witchcraft is in many instances held responsible for the appearance of leprosy in a community, so do charms and amulets prevail in its prophylaxis and treatment. Perhaps the most gruesome of these ceremonies is that practiced in the islands of Tawitawi and South Ubian, where the natives have made little or no progress in civilization. The patient is taken to some unfrequented spot in the woods or mountains, where a bullock is slaughtered and dressed up to the point of splitting the spine. The leper, perfectly naked, is then

placed in the body cavity and remains there for twenty-four hours, during which time the vigorous "tom-tom" of his friends and the incantations of the medicine man are supposed to transfer to the carcass all the impurities of the individual, who is expected to emerge from his extraordinary entombment sound and whole. In other parts of the archipelago tuberculous lepers are driven from their homes and usually find refuge in one of the numerous uninhabited islands near at hand. The following cases are presented to illustrate the types encountered in Sulu:

Case I.—Filipino laborer; age, 37; native of Pampanga Province, Luzon; exhibiting characteristic lesions of the combined anæsthetic and tuberculous form. So far as leprosy is concerned, his family history is clean, though the man has seen enough of the disease in his native village to recognize it when it appeared on his own person. In 1893 he enlisted in the Spanish army and was sent to garrison at Jolo, where he served until the evacuation in 1899. He then obtained employment from the American provost-marshal and worked steadily as a scavenger up to May, 1903, when my attention was called to him rather forcibly by encountering the leper in my own bathroom. He was immediately isolated, together with his wife (who had for several years borne her share of the family expenses by doing laundry work for the troops), in a nipa shack beyond the main gate of Jolo, while the house they had occupied was repeatedly disinfected and allowed to remain vacant. The patient's attention was first attracted to the disease three years ago, by perceptible weakness of the muscles of his right hand and diminished sensation along the ulnar side of the arm.

Soon after a macular eruption appeared on the face, chest, and hips; the eyebrows were lost, the ear lobes enlarged, and nasal catarrh developed. At the time of examination the man presented a typical picture of leprosy in an advanced stage. The nerve involvement had gone on to complete anæsthesia; the nasal bones were absorbed; there was alopecia of the ciliary region, cloudiness of the cornea, and masses of lepromata studded the face, giving the characteristic expression. The man's wife shows at present no evidence of the disease, but, as is so frequently observed in these cases, the marriage has been a sterile one.

Case II.—Moro fisherman; age, 40; native of Panducan Island; a leper for ten years. Family history not obtainable. Through an interpreter the patient expressed the belief that he was infected by an "evil spirit" from a turtle he captured one day while out fishing. The following day violent pains in both arms were noted, succeeded later by a numbness, which has remained. I assured him this was the shortest incubation period on record, but the Moro appeared to derive small comfort from this somewhat questionable distinction. Examination shows an almost classical case of nerve leprosy, with complete anæsthesia below the elbows and along the dorsum of the right foot. The primary contractures have been followed by mutilations, resulting in the loss of three fingers and two toes, with stumps still showing extensive ulceration. There are no facial changes, no eruptions of any kind, and the man's general health is excellent. He is the father of 7 children, all born since the onset of the disease, but neither they nor his wife are lepers.

Segregation of Moro lepers is not practicable at this time on account of the unsettled conditions, and health officers at Philippine ports should exercise more than usual vigilance in the inspection of steerage passengers from these islands.

SANITARY IMPROVEMENTS AT NAPLES.

By Passed Asst. Surg. J. M. EAGER (on duty at Naples, Italy).

The beauty of the villa, the handsome pleasure ground extending along the sea at Naples, was marred during the height of the tourist season this year by excavations made throughout the length of the Riviera di Chiaia for the purpose of completing the extensive sewerage system of the city. The devastating epidemics of which Naples has so often been the victim, and especially the cruel prevalence of Asiatic cholera in 1884, were the prime movers in an agitation for better sanitation. New streets have been opened, many crowded and filthy buildings demolished, thus admitting sunshine and fresh air to sections that formerly were veritable pest holes. One of the most conspicuous results of the sanitary movement at Naples is the perfecting of the water supply. In a communication printed in the Public Health Reports August 29, 1902, a history and description of the water supply of Naples was given and reference made to the interesting circumstances leading to the restoration and extension of an ancient aqueduct delivering water from the same source as that drawn upon in the days of Pompeii and Herculaneum. This water from the springs of Serino was used by Cæsar's navy at Pozzuoli, and undoubtedly St. Paul drank it when he stopped at that place on his journey to Rome.

An adequate sewerage system at Naples would have been impossible without a sufficient water supply. These two factors are of great importance against the inroads of future epidemics to which Naples is particularly exposed, not only owing to the dense and impoverished population but to the direct communication of the port with the Orient. The sanitary status of Naples is extremely vital to the United States in view of the almost daily intercourse by sea between this city and New York (215 sailings during the year 1903).

SEWERS OF NAPLES.

The history of sewage disposal at Naples, which conveys many instructive hygienic lessons, carries one back to remote times. The ancient Greek settlements of Partenope and Neapolis, which occupied part of the present site of Naples, were healthful towns. They undoubtedly possessed a sewerage system, but the way in which it was constructed is totally unknown. Indeed, there is no document setting forth information regarding the sewerage of Naples until the year 1305.

In order to understand the problems which have confronted sanitary engineers at Naples not only in olden but in recent times a slight

knowledge of the topography of the city is necessary. A narrow ridge bearing the *Castello dell' Ovo* runs back from the sea, broadening out into the heights of *Pizzofalcone*, *Sant' Elmo*, and *Capodimonte*, which divide the city into two unequal parts. In the eastern division, extending as far as the *Sebeto*, lies the greater and most ancient part of Naples, the district where the cholera of 1884 worked such sad havoc. In the quarter to the west of the ridge most of the large hotels are situated. On the hills in which the ridge terminates back of the city is a new quarter of the town. The hill of *Posillipo*, bounding the city on the west and terminating in a promontory, is perforated by a tunnel, the new grotto of *Posillipo*, bored twenty years ago to replace the old grotto, which was constructed probably in the reign of Augustus. Both these tunnels are utilized in the new sewerage system of Naples. The western slope of the hill of *Posillipo* drains into the Gulf of *Pozzuoli*. Farther to the west is the Gulf of *Gaeta*, which in the future is to receive the foulest part of the sewage of Naples.

When the kingdom of Naples fell under the dominion of the house of Anjou a formidable castle was built on the seaside, the port was constructed, and a light-house still in use was erected. Planning for the sanitation of the section in which stood the castle, the residence of the king, Charles II called together several public officers who were expert in constructing public works and edifices and gave them orders to do what was necessary to enlarge the port, to clean up the dirt in that part of the city, and to take opportune measures to improve public sanitation. Among other works a large sewer, which exists at the present time, was constructed. This sewer runs along the mole. It was designed to gather not only excrement but also the rain water which ran through the streets and was collected at intervals by special orifices opening into the sewer.

Under the reign of the Aragonese a state of war prevailed from 1449 until 1528 and municipal sanitation was neglected under stress of the more urgent call of arms. More placid days began when Charles V had succeeded in ridding Naples of the residue of the French army. With the definite establishment of the Spanish dominion steps were taken with a view to the improvement of the city, which had become the capital of southern Italy. By increase in population and commerce the city has grown greatly, especially the eastern part, occupying the slope of the hill of *Sant' Elmo*, in which section the viceroy, Don Pedro de Toledo, built his palace. The architect of the palace, Ferdinand Manlio, was called upon to outline a system of sewers for Naples, an immense and difficult work in those times. These sewers collected not only the rain water of the most populous part of the city but the contents of the domestic drains and consequently some excrement. The water from *Capodimonte* was allowed to run in a channel through the streets, finally discharging into the sea near the *Sebeto*. So all the sewage collected from the eastern watershed was cast on the seashore between the *Sebeto* and the mole erected by the Anjou kings. The beach, from which arose the light-house at the foot of the promontory on which stood the university, was pestilential beyond measure. The draining from the western watershed, including the newer part of the city, was discharged by the sewers, in the beginning, at *Santa Lucia*, and, later,

along the Riviera di Chiaia, which was then a stretch of shore land rich in gardens, but without habitations except a few sumptuous villas toward Posillipo and some huts tenanted by fishermen. This sewer of the middle ages was made with a large central subterranean channel into which emptied branch sewers of diminishing size according to the distance from the main. The section of these conductors was quadrilateral, the pavement made of lava from Vesuvius and the lateral walls and arch of volcanic tufa. Along the course of the sewers were apertures into which the street water flowed. A special corps of guards was assigned to the duty of watching the sewers. It is remarkable with what precision the capacity of these conductors was calculated. Notwithstanding the copious floods recorded in local chronicles, it is noted that during their early history on one occasion only was their containing power exceeded and the contents thrown into the streets. Equally surprising is the solidity of their construction. There are points in which for many centuries the arches of these old sewers have sustained without damage the weight of huge stone buildings. Often in the recent work of improvement at Naples it has been necessary to abandon the pick and shovel and resort to explosives to remove parts of the old sewers. Considering the scanty water supply of Naples in those days, it is easy to conceive the horrors that arose from such sewers in seasons of scanty rain.

For more than two centuries, during which the growth in population and area of the city was continuous, this network of sewers was not extended. In later times, during torrential rains and southerly winds, the sewers often vomited their filth into the streets.

In parts of the town where the sewerage was inadequate the rain water was allowed to run along the public highways to the most accessible manhole. Privy pits and cesspools received the dejections and refuse water. At this time the supply of water which came from the former aqueducts of Bolla and Carmignano was intermittent and stored in cisterns in the intervals of delivery. Alongside these cisterns, too often not water-tight, were the privy vaults, usually leaky. As far as bad epidemics are concerned, however, all went well until the invasion of Asiatic cholera in 1836-37. In that terrible epidemic the quarters most affected were in the lower parts of the city, where the sewers were defective, while among the communities on the hills there were fewer victims. Indeed, some sections were entirely exempt from the scourge. Years were passed in the discussion of sanitary remedies, when in 1854 another grave epidemic of cholera spread itself over precisely the same area of stagnant and inadequate sewers. The lesson was learned slowly, perhaps in part because of the prevalent belief in the transportation of cholera by the air. Light and air were demanded, but there were great difficulties in the way of tearing down blocks of buildings. Sewerage and water were secondary considerations until 1860, when the municipal administration began to work seriously on the problems of water and drainage. The disposal of surface water received the first attention. Canals for surface water were constructed, but owing to the differences in levels the street water in many parts of the city did not flow into the new channels, but was taken up by the old sewers. A serious fault arose, however. The new water courses, through irregular procedures, were used for the discharge of private cesspools and public urinals and as receptacles for street sweepings and rubbish.

With the installation of Serino water the construction of a satisfactory system of sewerage was seriously taken up, having the following ends in view: To purify the seashore, liberating it from all liquids containing putrescible matter; to preserve the subsoil from harmful infiltration either of matters transported by or developing in sewers; to prevent the lower parts of the city becoming more unhealthy through matters brought from higher sections; to cleanse the subsoil of the lower sections, getting rid of the foulness already therein; and to construct appropriate sewers in all the streets, doing away forever with cesspools and privy pits in all parts of the city. The single system, owing to local topographical conditions, has not been adopted throughout. The continuous water carriage of all foul matter in separate sewers was admitted to be the only method practicable for the lower and middle levels of the city. Flood water is conducted by separate sewers, except in the higher section of the city, where the single system has been introduced. The surface-water channels empty at the two extremities of the city. Those for filthy sewage have their outlets one at the point of Posillipo, the other at Licola, a desert beach of the Gulf of Gaeta, 15 kilometers from Naples.

In regard to the disposition of the new sewers the city has been divided into three zones, a lower, including the stretch of the city, having a height of less than 12 meters above the mean level of the sea, a middle zone extending to 22 meters, and an upper zone above that level. So there are three collectors, high, middle, and low. The high collector, on the mixed system, begins at the Porta San Gennaro at a level of 17.09 meters and descends to Piedigrotta, the Naples end of the tunnel through Posillipo Hill, where its altitude is 12.40 meters. The fall is 1 per cent. The middle collector begins at the Corso Garibaldi at a level of 8.80 and descends with a fall of 0.75 per cent to Piedigrotta, where its level is 4.50 meters. The low collector is double, one part serving for the eastern zone, the other for the western section. The contents of the two sections of the low conductor are pumped into the middle collector at appropriate places, and the combined contents of the middle collector are similarly lifted into the lower extremity of the high conductor at Piedigrotta.

In the construction of the conductors application has been made of material from Vesuvius. The floors and lateral walls are made of lava and of mortar of hydraulic cement and volcanic sand. The vaults are built in some places of volcanic tufa and in others of bricks of terra cotta. Over the arch, which nearly reaches the street level, is a layer of concrete of scoriæ and hydraulic cement. An extra solid foundation of slag and cement has been laid under the low conductor in places where it runs at the level of the sea. The internal walls of the collectors are covered with a layer of varying thickness of hydraulic cement and in places are liberally plastered with a mixture of mineral asphalt and sea sand. Purifying pits and hydraulic interception are installed to reduce the quantity of organic and solid matter entering the sewers from the streets and to regulate the ingress of surface water. To render fecal matter more fluid, use is made of water furnished by the ancient aqueducts of Carmignano and Bolla, while in the smaller sewers there is a special apparatus whereby water is automatically drawn from the Serino mains.

Suitable ventilation is also provided for by appropriate engineering devices. The sewer of Cuma, which is destined to transport the sewage from Piedigrotta, is 15,572 meters in length. The end is prolonged 50 meters under the sea. The fall of the terminal part is 3 per cent, and is constructed in such a manner as to be unaffected by the action of the waves even in the most tempestuous weather. The current produced by the rapid fall is of sufficient strength to overcome the resistance of the waves and to sweep away from the mouth all the deposits that the sea may accumulate.

The sewer of Corolio, which runs from Piedigrotta to the point of Posillipo, is destined to transport a large part of the rain water and only a small quantity of foul material, and that only in case of exceptional rain. Its length is 5,248 meters.

CATHETER IN BLADDER—REMOVAL THROUGH PERINEUM.

By Passed Asst. Surg. J. A. NYDEGGER.

This case is reported because it is one of rather unusual occurrence. F. G., age 42, a French sailor, was admitted to the marine hospital, Baltimore, Md., in February, 1903; had gonorrhœa in 1901 and again in May, 1902. He was treated in a hospital in October, 1901, for inflammation of bladder following his last attack of gonorrhœa. He left the hospital improved. In November last he began the use of a rubber catheter on account of occasional retention of urine.

On January 25, 1903, he fell asleep in the forecabin of his vessel with his catheter in his urethra. On awakening several hours later the catheter could nowhere be found. He believed it had gone into his bladder.

About one week later he was seen for the first time. His symptoms were those of an aggravated case of cystitis. There was frequent urination. There was constant pain and a burning sensation referred to the head of the penis, urethra, and bladder, all of which were increased after voiding urine. The urine had a specific gravity of 1.011, was strongly alkaline, of a yellowish color, with an ammoniacal odor, and contained rather a large amount of mucus.

At the time not much credence was given to his statement as to the whereabouts of the catheter, as the patient was of a neurotic type, and the catheter might have easily slipped out and gotten concealed under some object or hidden or thrown away by some mischievous shipmate. His bladder was explored with a sound, but nothing was made out.

The patient was ordered in bed and treatment locally and internally administered, but there was no amelioration of his discomforts. The condition grew worse. Drainage of the bladder through the perineum was decided upon. Median lithotomy was performed. Upon introducing a finger into the bladder it came in contact with a somewhat resistant roughened surface. A pair of long-jawed artery forceps were introduced over the finger and the object grasped and drawn out. It proved to be a full length soft-rubber catheter, size 16, covered with phosphatic deposits. The catheter was quite rotten, having been in the bladder over a month, and broke on traction necessary to draw it through the urethra, and was removed by piecemeal.

The patient was continued on his former treatment, which consisted of urotropin, salol, and boracic acid administered by turns, and the bladder irrigated twice daily with warm boracic-acid solution. All symptoms subsided promptly and recovery ensued.

A point of interest in connection with the case is the fact of the patient having carried the catheter about in his bladder for over a month and the delay in operation due to the lack of belief in his statement. The previous history of a rather recent attack of cystitis without complete recovery helped to mask the cause of the aggravated symptoms set up in the bladder by the presence of the catheter.

REPORTS OF FATAL CASES WITH NECROPSIES.

Following are the reports on cases dying at the marine hospitals, with necropsic findings:

ALCOHOLISM.

I.

L. W.; white, male; aged, 42; born in Pennsylvania; admitted to the United States Marine Hospital at Chicago, Ill., July 20, 1903, and died July 25, 1903.

HISTORY.—Patient states that for twelve years he has been a heavy drinker. He says he started on a spree on the morning of July 4, and by noon was quite intoxicated and laid down somewhere to sleep. While lying there asleep some one placed a lighted cannon cracker between his thighs. Upon its explosion he was severely burned on the scrotum and inner aspect of the thighs. He neither received nor sought treatment for the burns, which are now healing. Since that day he has been drinking continuously, and now applies for treatment in order that he may sober up.

PRESENT CONDITION.—Patient is in a very nervous state, his hand shaking like one with the palsy. Tongue is coated, eyes are red at margin of lids, and he has the general appearance of one on a protracted spree. He was ordered to bed and on strictly milk diet, and was given chloral and bromides, followed the next day by castor oil.

July 22.—Patient wretchedly nervous, and has temperature 40.4°. Looks pale; reports pain in left chest and cardiac region; says he had a chill, but did not report it till questioned very closely. On auscultation a few medium mucous râles can be heard at base of left lower lobe; is put on digitalis.

July 23.—Patient in considerable delirium last night; is exceedingly nervous; says he saw devils and animals in his delirium. Physical signs improved. No dullness, crepitating râles, or other signs of impending or actual pneumonia.

July 24.—Patient is very weak and tremulous. Temperature is 38.4°; pulse, 146; respirations, 54. No dullness present over the thorax, and heart sounds are shallow and frequent; some râles present in all lobes, except left upper lobe, where the sound is somewhat dry and tubular in character. The treatment now consists of stimulants, bromides and chloral having been discontinued. Urinary analysis showed presence of albumen and casts—epithelial and granular.

July 25.—Patient is delirious and restless, attempting to leave bed all the time. Pulse, 150; respirations, 58; very shallow and markedly diaphragmatic in character. On physical examination, which was very difficult on account of restlessness and grunting expirations, some flattening of percussion note was elicited over right lower lobe, but it did not amount to dullness. Mucous râles with sighing expiratory murmur were heard all over lungs. Heart sounds could not be differentiated, owing to noisy pulmonary sounds; passes plenty of urine.

Patient so restless that a hypodermic of hyoscine hydrobromate was given with little effect. Patient gradually became unconscious about noon and has remained so, but is very restless.

Despite active stimulation the patient's condition became more and more grave. He rapidly weakened, his pulse grew feebler, respirations remained quite rapid, but were shallower. At about 5.30 p. m. he had a sudden turn for the worse, respirations finally ceased, and cardiac action ended at 5.40 p. m. Patient had not regained consciousness before death.

NECROPSY (22 hours after death).—Body that of a well-nourished male; post-mortem lividity marked in dependent portions and face; both orbits and scrotum edematous; small burns on inner sides of thighs and scrotum nearly

healed. Thorax: The pericardium contained about 10 c. c. bloody serum; the right lung weighed 980 grams; markedly anthracotic, lower part of upper lobe in red hepatization; left lung weighed 1,190 grams; upper portion of upper lobe in hepatization, lower part showed hypostatic congestion; anterior surface of hepatized portion showed frothy, bloody fluid; a few not very recent adhesions at base; heart weighed 310 grams, very flabby, and contained some post-mortem clots; muscular tissue pale, but not especially friable; all valves competent; they were all red in color, the aortic and tricuspid valves being dark red, almost bluish; the aorta was bright red and velvety in appearance. Abdomen: The liver weighed 1,670 grams; was pale, reddish yellow in color, lobules not differentiated, doughy in consistency; the right kidney weighed 200 grams; capsule stripped off readily; tissue soft and flabby; deeply congested externally and on section; the left kidney weighed 175 grams, slightly congested, normal in consistency; the stomach and intestines greatly distended with gas, and showed signs of congestion; bladder contracted and empty.

L. P. H. B.
C. E. B.

II.

J. M.; age, 34; nativity, Michigan; admitted to the United States Marine Hospital, Cleveland, Ohio, April 17, 1904, and died April 19, 1904.

HISTORY.—Brought into hospital suffering from a fracture of right tibia in lower third. He showed symptoms of alcoholism upon admission. He was a heavy drinker and had been on a protracted spree for several weeks. His condition was such that he could not give an intelligent history. *Delirium tremens* developed April 19, and he died at 8 p. m.

NECROPSY (14 hours after death).—Body of a large, well-nourished, white male; rigor mortis well marked; considerable post-mortem lividity of dependent parts; no scars; lower third of right leg considerably swollen, marked ecchymosis around lower third; considerable unnatural mobility at this place with crepitation; an incision over this point shows some oedema and ecchymosis of soft parts; the tibia shows a Y-shaped fracture; the upper fragment pointed and held between the two arms of the lower fragment; fibula not fractured. Brain: Convolutions well marked, severe venous and arterial congestion with oedema; brain wet and soggy; considerable increase of cerebro-spinal fluid—typical wet brain; brain weighed 1,140 grams; spinal cord not examined. Thorax: Incision through thorax and abdomen shows subcutaneous fat well marked; pleura free; pericardium contains considerable fat; heart not enlarged, walls rather thick and show slight fatty change, valves normal, weight of heart 450 grams; lungs show slight hypostatic congestion, otherwise normal in appearance, left lung weighs 650 grams, right lung weighs 725 grams. Abdomen: Peritoneum normal in appearance; omentum contains a large amount of fat; intestines free, no adhesions; stomach and intestines slightly distended with gas; liver is rather large, exterior shows mottled surface, on section shows fatty changes and weighs 1,890 grams; gall bladder is distended with dark-colored bile; great increase in perinephritic fat; capsules of kidneys strip easily, on section both kidneys show fatty changes, left weighs 165 grams, right weighs 190 grams; spleen is normal in appearance, weighs 290 grams; in omentum are five or six small round bodies the size of a pea, which on section appear to be accessory spleens; pancreas appears normal, weight 85 grams; bladder full of urine.

ANATOMICAL DIAGNOSIS.—Fracture of right tibia; congestion and oedema of brain.

H. S. M.

BERIBERI.

B. O.; age, 48 years; nativity, Norway; admitted to the United States Marine Hospital, San Francisco, Cal., August 18, 1903; died October 13, 1903.

HISTORY.—The patient stated that for the past three weeks he had been suffering from cough, dyspnea, and general dropsy. Examination: Tongue coated; face cyanotic; many moist râles in both lungs; area of heart dullness increased toward the left side; heart sounds very feeble; pulse 163, weak and irregular; abdomen and legs tense from dropsy; urine, specific gravity, 1.026; daily quantity, 1,000 c. c.; no albumen present.

By the use of stimulants and tonics the patient became much improved, his dropsy disappeared almost entirely, and his strength returned. On September

20 pericarditis developed and his old symptoms gradually returned. He lost his appetite, which had previously been good, his respirations were labored, and his pulse weak and irregular. He died from exhaustion October 13, at 1.20 a. m.

NECROPSY (10 hours after death).—Height, 5 feet 8 inches; trunk and legs very oedematous; arms rather emaciated; post-mortem lividity and rigor mortis well developed; face of livid blue color; superficial ulcerations on calves of both legs; scrotum and penis oedematous. Over frontal region of skull, a little to the left side, exists a deep depression about 3 inches long and 2 wide, the remains of an injury many years ago. Brain: On removal of the calvarium it is seen that the outer table over the depressed area is absent, the skull there consisting only of the inner table; the latter is not at all depressed, nor are the frontal convolutions, but the bony plate is very thin and transparent when held up to the light; brain weighs 1,333 grams; cerebral tissue is generally very anemic in appearance; otherwise the cranial contents are normal. Thorax: The anterior mediastinum exposed and the margins of the lungs and the pericardium found to be strongly bound together by fibrous adhesive bands; on opening the pericardium an amount of serous fluid escapes; pericardium is so strongly adherent to neighboring structures that it can be separated only with great difficulty; its layers are much thickened and of fibrous consistency; the heart and pericardium are strongly adherent in places, and the inner surface of the pericardium is roughened and exhibits a "bread-and-butter" appearance; the heart weighs 480 grams, is enlarged, and the musculature is of pale red color; the mitral valve is thickened and roughened; the other valves appear normal; the left ventricular wall is $1\frac{1}{2}$ cm. in thickness, that of the right $\frac{3}{4}$ cm. The right lung adheres firmly to the diaphragm and pericardium and weighs 460 grams; the upper lobe is crepitant, grayish red on section; the lower lobe is noncrepitant, dark red in color, and cuts with increased resistance; the section is bloody and oedematous; the left lung is intimately bound to the chest wall and diaphragm, and weighs 290 grams; measures 23 by 15 by 5 cm., is retracted, and considerably smaller than the right lung; the apex shows an old scar completely healed; it is generally crepitant and is of reddish gray color; the great vessels and nerve trunks are normal; the diaphragm adheres to the bases of the lungs. Abdomen: On opening the abdominal cavity a large amount of clear serous fluid escapes. The peritoneum is smooth and shining. The great omentum is contracted, contains very little fat, and is of a dark brownish-red color. The spleen weighs 295 grams, is enlarged, and cuts with increased resistance; the pulp is firm and somewhat hard to the touch. Several interstitial hemorrhagic areas are present; cut section rather pale in color. The left kidney is 235 grams in weight, is enlarged, and bound by strong adhesions to the lumbar region; it measures 6 by 12 by 4 cm.; it cuts with increased resistance, showing a narrow cortex ($\frac{1}{4}$ cm. thick), with red and yellow striations and some increase of interstitial tissue; the fibrous capsule strips readily. The right kidney weighs 200 grams and measures 6 by 12 by 3 cm.; it is not bound down quite as firmly as is the left organ; it presents a nearly similar condition to that of the left, except for a somewhat greater increase of the interstitial connective tissue. The suprarenal capsules are both enlarged and sclerosed and cut with increased resistance. The urinary bladder contains a moderate amount of clear urine. The organs of generation are normal, except for oedema of the penis. The rectum and duodenum are normal. The stomach shows hemorrhagic areas throughout its mucous membrane. The gall ducts and gall bladder are normal. The liver weighs 1,800 grams; its external surface is pale and streaked with whitish lines; it cuts with increased resistance, and the section gives the typical nutmeg appearance; the section feels somewhat greasy; it measures 22 by 24 by 8 cm. The pancreas is hard and nodular and cuts with increased resistance; on section it is somewhat lighter in hue than normal. The solar plexus and mesentery are normal. The small intestines are nearly empty; there is some congestion of the mucous membrane of the ileum. The large intestines are distended with gas; the cæcum is bound by adhesions to the iliac fossa. The vermiform appendix is long, free, and of normal appearance. The great vessels are also normal.

ANATOMICAL DIAGNOSIS.—(Edema of trunk, legs, scrotum, and penis; absence of portion of external table of skull; chronic adhesive pericarditis, with effusion; fibrous adhesions between heart, pericardium, pleurae, lungs, and diaphragm; cardiac hypertrophy and dilatation; sclerosis of mitral valve, with insufficiency; chronic fibrous pleuritis; passive congestion of lower lobe of

right lung; healed cicatrix in left apex; chronic phrenitis; ascites; contraction of omentum; chronic splenitis, with infarction; sclerosis of kidneys; sclerosis of suprarenal capsules; chronic gastritis; hypertrophic cirrhosis of liver; sclerosis of pancreas; chronic enteritis; remains of old perityphlitis.

C. R.

W. G. S.

CIRRHOSIS OF LIVER.

T. S.; aged, 49; nativity, Holland; admitted to United States Marine Hospital, Boston, Mass., August 24, 1902; died September 10, 1903.

FAMILY HISTORY.—Father killed. Mother died of paralysis. Otherwise negative.

PREVIOUS HISTORY.—Beriberi five years ago; yellow fever ten years ago; severe injuries three months ago to right shoulder and head, caused by contact with machinery; gonorrhea four times, stricture at present; used alcohol and tobacco freely up to six months ago.

PRESENT HISTORY.—Abdomen began to swell as he was recovering from his injuries three months ago; never had any pain; has lost much flesh.

PHYSICAL EXAMINATION.—Patient very thin and pale; chest hyperresonant over lungs in front down to fifth rib; breathing exaggerated; apex and lower border of heart not determined; liver extends from fifth rib to two fingers' breadth below costal border; abdomen very tense, and tympanitic over middle, with dullness in flanks, which changes with position of patient. Abdomen tapped and 10,000 c. c. of fluid removed, which gave patient considerable relief. Thereafter patient was tapped about once a fortnight, the amount of fluid varying between 10,000 and 12,000 c. c. Bowels kept active with Ext. Apocyni cannabini fld. 8 c. c. t. i. d. Patient's only complaint is extreme thirst. During the month of March patient very weak and was obliged to stay in bed most of the time. Abdomen tapped about once a week. Elaterium gm. 0.002 t. i. d. prescribed and continued for a week. About the middle of May patient began to improve, became brighter and more cheerful, and was up and about most of the time.

On June 12 patient was tapped again, having been forty-two days without tapping, and 5,000 c. c. of fluid withdrawn; continued well until the last of July, when he began to fail, requiring to be tapped with increasing frequency. Elaterium was again prescribed, but it nauseated the patient and was abandoned. On August 30 patient took to his bed and stayed there entirely thereafter.

September 4.—Patient only semiconscious.

September 5.—Passing urine and feces involuntarily; takes little nourishment.

September 6.—Somewhat brighter to-day and responds when spoken to.

September 8.—Still holding his own, but apathetic.

September 10.—At sick call this morning patient appeared very low and death occurred at 12.20 p. m.

NECROPSY (10 hours after death).—Body ill-nourished and emaciated; post-mortem lividity well marked; rigor mortis very slight. Median incision revealed peritoneum as very much thickened and fibrous, while the omentum appeared as a very thin membrane. Intestines were very much filled with gas and the abdominal organs were much displaced. Pericardium contained usual amount of clear fluid, and heart contained a considerable quantity of blood and both post and ante mortem clots. Weight of heart, 320 grams; valves apparently normal. Left lung adherent, especially to diaphragm, weight 920 grams, normal on section. Right lung also adherent, weight 1,050 grams, and apparently normal on section. Enormous thickened mesentery; intestines difficult to remove; otherwise normal. Pelvic cavity very shallow, owing to the thickening and contraction of peritoneum. Spleen very adherent and enlarged, weight 470 grams, and on section shows increase of connective tissue. Left kidney weighs 250 grams, right kidney 170 grams; cortex of both kidneys deeply congested. Liver very much contracted, firm and hard, showing great increase of gray connective tissue, weight 920 grams. Brain not examined.

DIAGNOSIS.—Cirrhosis of the liver.

W. C. R.

R. M. W.

DISEASES OF THE BRAIN AND ITS MEMBRANES.

Abscess of brain.

(Syphilis, secondary.)

J. R.; age, 40; nativity, Finland; color, white; admitted to the United States Marine Hospital, San Francisco, Cal., October 15, 1903; died December 11, 1903.

HISTORY.—Malarial fever when a child; gonorrhea eleven years ago; chancre fifteen years ago, followed by sore throat and vague symptoms; bad cold all last winter, and coughing and spitting for the last three weeks before applying for admission to the hospital. Complained of a steady pain in the left side of the head, which began about five months before and gradually increased in severity. He began to see double about two months ago and his eyes became crossed at that time; hearing was gradually lost in the left ear; was unable to sleep, digestion became poor; was constipated; got very dizzy on exertion. Examination showed internal squint; double vision; dryness of nose; coated and ulcerated tongue; enlarged and tender liver; anæsthetic leucodermic area size of nickel on left knee. The face exhibited a fairly typical leonine expression. Marked temporary improvement was observed after treatment with potassium iodide, but the old symptoms soon appeared again. The face became swollen on the left side, and the left eyeball bulged forward. The left eye gradually lost its power of motion and became fixed while the other moved, but vision remained fairly good until a late stage of the case; ptosis of the left eyelid supervened, followed by mild conjunctivitis; pain became so constant that morphine had to be frequently given. The vision of the right eye became impaired; urinalysis was negative; Irregular fever began to occur. The breath became exceedingly foul and mucopurulent matter was ejected from the nose and mouth. The tongue was fissured, ulcerated, and swollen, and the appetite failed. Consciousness was gradually lost and Cheyne-Stokes respiration and stertorous breathing occurred, the latter accompanied by a peculiar, shrill sound during inspiration. Ophthalmoscopic examination (earlier in the case) revealed choked disk in the left eye. The patient was taken to a specialist shortly after admission to the hospital, but no certain diagnosis was then made, though the case was deemed sufficiently suspicious to warrant isolation and a provisional diagnosis of leprosy. After a second and later examination by the same expert it was concluded that the case was one of cerebral syphilis. Death occurred at 5.55 p. m., December 11, 1903.

NECROPSY (16 hours after death).—Body emaciated; rigor mortis and post-mortem lividity present; post-mortem changes are present in the skin of the abdominal wall. The contents of the left orbit project forward and outward and the left cheek is swollen. The left eyelids are gummed together, and the right are partially open. The left forefinger is tightly flexed into the palm, all joints being ankylosed, and the left middle finger is rigid at the metatarsophalangeal joint—these the result of an old injury. On the skin of the left knee is a whitened area, size of a nickel. The left pupil is dilated. The tongue is eroded and swollen, and there is a fungous growth on the dorsal surface. **Brain:** The brain weighs 1,255 grams. On removing it from the skull a large abscess cavity is found in the middle fossa on the left side, involving a large portion of the temporo-sphenoidal lobe, and extending as far as the median line and into the sphenoidal fissure. The bony floor of the middle fossa has been destroyed and the abscess communicates by a large opening with the nasopharynx, and with the antrum of Highmore. Microscopical examination of the pus from the abscess reveals only pus cells and broken-down nerve tissue. The structures at the base of the brain are matted together with inflammatory exudate. The remainder of the brain appears normal externally and on section. **Thorax:** The costal cartilages of the first ribs are ossified. The lungs meet in the median line. The pericardium contains a small amount of clear serous fluid, and its layers are free all over. The heart weighs 370 grams. There is a moderate amount of fat on the external surface. It is somewhat broad laterally, and its tissue is soft and flabby. The myocardium cuts with normal resistance, and is of a reddish-brown color. The endocardium appears smooth and shining all over. The right auricle contains a large goose-fat clot, which extends into the right ventricle. There are small clots in the left auricle, and in the pulmonary artery. The aortic and pulmonary valves are competent to

the water test. The mitral orifice admits four finger tips; the tricuspid the same. The right lung is free in the pleural cavity, is of slate color anteriorly, darker posteriorly, and shows several hardened yellowish areas, size of a hazelnut, bulging from the surface of the lower lobe. It weighs 960 grams and is enlarged. Crepitation is good in the upper and middle lobes, and in the lower lobe except the yellowish masses, which on section are found to extend about half an inch into the lung substance, giving increased resistance. Their outlines are irregular. Section of the posterior portion of the lower lobe is bloody and oedematous; on section of the upper lobes pus exudes from the smaller bronchi. The left lung is bound to the chest wall at the apex by separable fibrinous adhesions; it weighs 640 grams. The external surface is similar to that of the right lung, and on the lower lobe are similar hardened yellowish bodies. At the outer border occurs a mass of the size of a pigeon egg, yellowish and firm at the periphery, but breaking down and undergoing liquefaction necrosis centrally. Smaller areas of yellowish deposit have invaded the interior of the lower lobe, which is bloody and oedematous, and shows pus in places. The peribronchial glands are enlarged, hardened, and of black color. The mucous membrane of the lower part of the trachea is congested. The esophagus is apparently normal. Microscopical examination of pus from the necrosed area in the left lung shows merely pus cells and broken-down lung tissue. The great vessels and nerve trunks are normal. The diaphragm on the right side reaches to the fifth interspace; on the left to the sixth. Abdomen: The peritoneum is smooth and shining. The great omentum is retracted to the left, is very thin, and is adherent to the abdominal wall in the left hypochondriac region. The spleen weighs 60 grams, is of slate color externally, wrinkles easily, and is normal on section. The left kidney weighs 185 grams, and is smooth externally. There are minute subcapsular hemorrhages. The fibrous capsule strips easily, and covers several minute yellowish nodules projecting from the cortex. Section shows diminished resistance, pale yellowish color, prominence of pyramids, and distinct cortical markings. The right kidney weighs 180 grams; it is firmly bound down to the posterior abdominal wall; its external surface and internal structure are similar to those of the left kidney. The suprarenal capsules weigh 27 grams, are much enlarged, and on section appear congested. The urinary bladder contains a small amount of turbid urine, and its mucous membrane is congested. The gastric mucous membrane shows areas of congestion. The organs of generation, rectum, and duodenum are normal. The gall bladder is distended with fluid bile, and the gall ducts are patent. The liver weighs 1,970 grams, and is enlarged. The external surface is smooth and mottled brownish yellow. Section shows diminished resistance, light color, and darkened lobular centers. The pancreas weighs 95 grams, and is slightly hemorrhagic on section. The solar plexus, mesentery, and small intestines are normal. The descending colon contains hardened fecal matter. The great vessels are normal. The vermiform appendix is normal.

ANATOMICAL DIAGNOSIS.—Syphilis (gumma) of left temporo-sphenoidal lobe of cerebral cortex, with abscess formation, destruction of bone, and involvement of orbit, nasopharynx, and antrum of Highmore; ossification of costal cartilages of first ribs; pulmonary syphilis (gummata) and oedema; chronic bronchitis; peribronchial adenopathy; localized, old omental and peritoneal adhesion; acute pleuritis, left apex; gummata of kidneys; congestion of suprarenal capsules; congestion of liver with fatty degeneration; congestion of pancreas.

C. R.
W. G. S.

Cerebral hemorrhage.

I.

H. M.; age, 32; nativity, Illinois; admitted to the United States Marine Hospital, Chicago, Ill., November 13, 1903; died November 25, 1903, at 9.30 a. m.

HISTORY.—Patient entered hospital with a severe headache and a history of frequent attacks of epistaxis. He was also suffering from acute catarrhal bronchitis. His hearing had become steadily worse and the left ear had discharged freely through a rupture of the membrana tympani. The bronchitis under treatment soon disappeared, but epistaxis was frequent and alarming at times, and headache was persistent.

On November 22, patient went to the toilet room at 11.30 p. m. and when returning fell to the floor. He was assisted to his feet by a patient and made

the remark that he felt dizzy and that he was losing his hearing. When seen by the medical officer he was lying partly prone on his left side. His skin was wet with perspiration and almost total muscular relaxation was present. He made some effort to answer questions, but soon lapsed into total unconsciousness. The head was directed to the left side. Pupils not responsive to light; right pupil dilated; the left contracted. At this time there was no muscular paralysis in the limbs. Breathing was stertorous and irregular, almost of the Cheyne-Stokes variety. Convulsive twitchings of the muscles of the left hand were noted. Temperature was 38° C., and the pulse of high tension, quick and hard, indicating arterio-sclerosis.

November 22.—Patient paralyzed in upper extremities and left leg. Patient given nitroglycerin, hypodermatically (0.001 gram) every three hours.

November 23.—Nitroglycerin given (0.001 gram) every four hours hypodermatically. Later in day strychnine sulphate was given hypodermatically every four hours, alternating with the nitroglycerin. At that time patient had total paralysis of both arms and legs and was unconscious; oxygen was used during the day.

November 25.—Patient grew steadily worse in spite of stimulation, and died at 9.30 a. m. without regaining consciousness.

NECROPSY (12 hours after death).—The body was that of a fairly developed, rather emaciated, young white male. Rigor mortis was fairly well marked. Post-mortem lividity not marked. The subcutaneous tissue was poorly developed, but the muscles were healthy in appearance and well developed. The pericardium contained about 20 c. c. of a clear, straw-colored fluid. The heart was normal in size and color. It weighed 430 grams. The muscular tissue was normal. All its cavities contained ante-mortem clots. The aorta was smooth and contained no calcareous deposits. The coronary arteries were sclerotic and calcareous deposits were found on the pulmonary valves; also on the aortic valves, which were partially destroyed. The bicuspid orifice admitted two fingers. The lungs were deeply congested, especially at their bases. They were crepitant, however. The right lung weighed 870 grams, the left 650 grams. On section both lungs showed dark red, and dripped blood. They contained no millary deposits. The liver was a good example of "nutmeg liver." It weighed 2,160 grams. Its vessels contained calcareous deposits. The spleen was enlarged, and weighed 825 grams. The kidneys were normal. The right weighed 205 grams, the left 230 grams. The stomach and intestines were normal. The appendix vermiformis was 4 inches long and was normal. The bladder was nearly empty. The ureters were normal and pervious throughout their entire length. The calvarium was removed and the dura exposed. The latter was apparently normal. The longitudinal sinus was found empty. The pia mater was deeply congested and adherent along the fissure of Sylvius. An opening was found in the right hemisphere near the base of the Sylvian fissure, in the ascending parietal lobe. The brain substance was friable and soft in this situation. On making sections through the lateral ventricles the right ventricle was found enlarged and contained about 25 c. c. of blood clot. The left ventricle contained only a small amount of blood. The brain substances around the region of the ventricles was disintegrated, being very soft and friable. The cerebellum and medulla were apparently normal.

F. A. A.
C. E. B.

II.

S. M.; age, 31 years; nativity, Austria; admitted to Marine Hospital, Portland, Me., March 25, 1902; died October 12, 1903.

HISTORY.—Patient had history of an attack of unconsciousness previous to entering this hospital, followed by hemiplegia of left side, also loss of control over sphincter of bladder; mental condition good; sensation only partially destroyed. A few hours before death he began to have attacks of convulsions every five to ten minutes, attended by unconsciousness; between attacks was conscious. On day of death temperature reached 40.1°; pulse, 160.

NECROPSY (13 hours after death).—Body well nourished; rigor mortis well marked; post-mortem discoloration on neck and right side of head; deformity of right hand and foot from paralysis and contracture. Scalp reflected back by incision across top of head; no hemorrhage under scalp; circular incision through muscles of skull; skull cap rather thin; dura separated easily; cerebral vessels much degenerated, hard, and tortuous. Large hemorrhage in right cerebrum; large clot and extreme dilatation of right ventricle; clot weighed

32 grams. Sixteen grams of recent hemorrhage in left ventricle; dilatation much less than on right side; small hemorrhage noted in pons and base of cerebellum. Body opened by long incision from chin to symphysis pubis, and incision made across abdomen, muscles reflected back, and chest opened. Glands of neck were noted to be enlarged. Thoracic cavity: Diaphragm attached between eighth or ninth rib; normal amount of fluid in pericardium; left ventricle hypertrophied; mitral valve incompetent; aortic valve pale and flabby, but competent; small ante-mortem clot noted in right ventricle; weight of heart, 480 grams. Lungs: Left lung much congested; weight, 450 grams; right lung oedematous; weight, 750 grams. Gall bladder distended and containing dark, almost black, fluid; ducts patent. Abdomen: Liver congested and bleeds easily on section; substance of liver firm; weight, 1,320 grams; spleen is a dark-blue color, substance fairly firm, capsule wrinkled; weight, 240 grams; small supernumerary spleen on artery. Pancreas: Weight, 90 grams; substance firm and normal. Stomach normal in size; mucous membrane congested; stomach contained 1 ounce of a dark, sticky mucus; pylorus normal; cardiac opening normal; stomach chronically inflamed and contained numerous hemorrhagic spots. Left kidney: Normal in appearance; weight, 135 grams; capsule separated easily; line between cortical and medullary substance well marked. Right kidney: Weight, 90 grams; congested and bleeds easily on section. Ureters normal. Bladder normal and contained 3 ounces of urine. Intestines: Appendix long, and contained a number of concretions. Cause of death: Hemorrhage in floor of fourth ventricle, resulting in paralysis of respiration. The remarkable thing in this case is, though the man was only 31 years old, his arteries were like reeds or quills; they were so hard as to break when pressed together, and were full of small dilatations.

W. P. M.

III.

J. N.; aged 65; nativity, Nova Scotia; admitted to the United States Marine Hospital, Boston, Mass., on December 13, 1899, and died January 9, 1904.

HISTORY: Family and previous history negative.

PRESENT HISTORY.—Patient was unable to talk, and it was impossible to secure any subjective symptoms. The lower face, arm, and leg on the right side were paralyzed, and there was aphasia and rigidity of the muscles of the affected side. Knee jerk increased and some ankleclonus present. Hearing seemed to be good. Patient had the appearance of having been at one time a powerful man and seemed to be still very strong. At the time of admission was unable to walk and was practically helpless. When questioned always answered by holding up the first and second fingers of the left hand.

TREATMENT.—Tonics, such as iodide of potassium, strychnine sulphate, and the elixir of iron, quinine, and strychnine, and an occasional cathartic.

January 5, 1904.—Patient became unconscious and comatose during the night; all the evidences of another hemorrhage were present.

January 9, 1904.—Patient continued unconscious, and died at 4.10 a. m.

NECROPSY (6 hours after death).—Body was that of a well-nourished man; rigor mortis well marked; post-mortem lividity, slight; right wrist ankylosed; right hand, "main en griffe;" usual incision made in the median line. Thorax: Pleura was nonadherent and the pleural cavity contained small amount of fluid. Right lung was normal; weight, 700 grams. Left lung was normal; weight, 870 grams. Pericardium contained 50 c. c. of straw-colored fluid. Heart was normal; weight, 550 grams. Left ventricle contained small post-mortem clot; right ventricle contained an ante-mortem clot. Abdomen: Abdominal fat was 9 cm. in thickness. Liver showed chronic passive congestion; weight, 1,250 grams. Both kidneys were normal; weight, 175 grams. Stomach was normal. Large and small intestines were normal except for the fact that the jejunum presented an invagination, probably post-mortem. Bladder and pancreas were normal. Spleen was normal; weight, 120 grams. On removal of the calvarium much serum escaped. Brain weighed 1,250 grams. The cerebrum presented on the left side a degenerated area of large size. It was of chocolate color, and presented the remains of an extensive blood clot. The brain tissue beneath it was soft and semifluid. The dura was greatly thickened over the degenerated area.

R. M. W.

R. C. R.

J. D. F.

DISEASES OF THE HEART AND GREAT VESSELS.

Acute endocarditis.

C. B.; white; age, 22; admitted to the United States Marine Hospital, Stapleton, N. Y., September 16, 1903; died September 22, 1903.

HISTORY.—Personal history and family history negative. On admission the principal symptoms were a dull pain in right shoulder joint, a feeling of general weakness, and a temperature of 38° C.

PHYSICAL EXAMINATION revealed slight swelling of right shoulder joint and a systolic murmur at apex of heart. Upon inquiry it was learned the patient had previously had two attacks of rheumatism. The usual remedies for rheumatic fever were given, and a slight improvement noted on second and third days. Pulse ranged from 97 to 118 and temperature from 38° to 39° C. Patient became delirious on morning of September 20 and grew gradually worse until noon on the 22d. At this time oxygen inhalations and venesection were resorted to in order to relieve the embarrassment of the heart, but without result.

NECROPSY (24 hours after death).—Body fairly well nourished; rigor mortis and post-mortem lividity marked; small amount of subcutaneous fat. On opening the thoracic cavity, the pleural surfaces were found adherent over anterior and posterior aspect of both lungs, and at their bases. Each pleural cavity contained about 450 c. c. of serous fluid. The pleural surfaces presented areas covered with organized lymph. The lobes of the lungs were adherent, and the surface of each presented nodular appearances which were found on incision to be filled with a brownish pus. Microscopic examination of the pus revealed the usual pus organisms, tubercule being absent. Tissues of both lungs crepitated, save at above-named areas, and both floated. Right lung weighed 770 grams; left, 735 grams. Bronchi were filled with a frothy mucus. The dependent portions were congested. Pericardial sac contained 35 c. c. of serous fluid; heart weighed 285 grams, contained no clots. The valves were very much congested, and vegetations were found on mitral and aortic segments. Peritoneum showed no adhesions; omentum congested, and lymph nodes of mesentery enlarged; intestines distended with gas, congested in lower portion of jejunum and ileum, and presented areas of hemorrhagic extravasation. Liver was enlarged and weighed 2,250 grams; gall bladder was distended. Spleen was adherent and weighed 280 grams. Kidneys were apparently normal, capsules stripped easily. Right weighed 210 grams; left, 200 grams. Incision into affected shoulder joint revealed nothing of interest.

H. McG. R.
P. H. B.

Acute pericarditis.

A. B.; color, brown; age, 41 years; nativity, Guam; admitted to the United States Marine Hospital, San Francisco, Cal., December 7, 1903; died December 9, 1903.

HISTORY.—Three days ago sickness began with a cold and severe pain in the lower part of thorax and abdomen. He was short of breath; had a bad cough and vomited frequently; vomited matter contained blood.

EXAMINATION.—Rough sounds heard over entire left lung and base of right lung; dullness over whole of left lung anteriorly and posteriorly and over base of right lung; area of cardiac dullness enlarged and rough grating sounds heard over heart; pulse, 120; respiration, 25; temperature, 38° C. The temperature did not rise above 38.2° and the pulse fell to 88 and was soft and compressible. He suffered greatly from dyspnea and his face was much cyanosed. He died from exhaustion 9 a. m., December 9, 1903.

NECROPSY (6 hours after death).—Body large and heavy; very fat; length, 153 cm. Brain: Weight, 1,170 grams, tissue apparently normal. Abdomen swollen, walls 7 cm. thick, organs covered with fat and great lumps of fat in omentum; costal cartilages ossified; mediastinum contains much fat and fat also covers the pericardium; pericardium attached to right pleura, on opening its sac a large amount of greenish fluid escapes; the sac is lined with a thick soft fibrous exudate. Heart: Weight, 610 grams; valves normal except mitral, whose edges are roughened; right side contains a black clot; thickness of wall of right ventricle, 1 cm.; of left ventricle, 2 cm. Left lung: Weight, 490 grams; tissue crepitant; color on section, grayish red; blood and serum

oozes from its surface. Right lung: Weight, 550 grams; the adherent pleura is covered with a fibrous layer, tissue is leathery to the touch, only slightly crepitant; color on section, dark red; dark blood oozes from its surface. Spleen: Very small, apparently normal. Left kidney weighs 222 grams, capsule non-adherent, pelvis filled with fat, cortical portion shows indistinct yellowish striations, pyramids prominent. Right kidney weighs 210 grams; tissue same as left. Bladder empty, urethra normal, stomach contains undigested food, its mucous membrane is covered with grayish-brown mucus; small and large intestines normal. Gall bladder filled with bile, ducts patent. Liver weighs 2,820 grams, tissue cuts with increased resistance, center of lobules of a dark color.

W. G. S.

Aneurism of the aorta.

J. M.; age, 46; nativity, Portugal; was admitted to the United States Marine Hospital, Boston, Mass., August 7, 1903, and died November 2, 1903.

HISTORY.—Family and previous history negative; was admitted to the hospital July 2, 1903, suffering from a cough of eight months' duration and expectorating considerable coal-streaked sputum. The coughing was accompanied by some pain, but there was no obtainable history of night sweats nor could tubercle bacilli be demonstrated in the sputum. At the time of entrance there were no marked physical findings except that the left arm and forearm were pulseless. Later he complained of pain in the arm and thought he could hear a rough sound synchronous with the beat of his heart. Examination was made from time to time to determine the presence of an aneurism. On July 29, 1903, a slight tracheal tug was detected and a hitherto undiscovered presystolic murmur. By August 5, 1903, this murmur had greatly increased and a systolic bruit was noted. There was a heaving sensation over the precordial area, and as the cough and expectoration had much diminished he was discharged to be readmitted under the diagnosis of aneurism.

PHYSICAL EXAMINATION.—Well nourished; somewhat pale and anxious facies; no discoverable pulmonary lesion. There was a slight swelling over the manubrium, and the superficial veins were dilated. The apex beat was displaced downward and to the right. In spite of all medical treatment, the swelling over the manubrium gradually increased in size until it reached the size of a small orange, when the patient died at 6.15 a. m., November 3, 1903.

NECROPSY (4 hours after death).—Legs and feet greatly swollen and œdematous; rigor mortis moderate; tumor, the size of a coconut, at the upper part of left chest between midsternal and anterior axillary line. The usual medium incision made, a little to the right of median line in chest. No abnormal fluid in the abdominal cavity. Small intestines removed first, followed by large intestines, liver, spleen, kidney, stomach, and pancreas; sternum and costal cartilage removed with difficulty. Thoracic cavity: Right pleural cavity contained 150 c. c. of clear serum; no particular adhesions of right lung to pleura; left pleural cavity contained about 250 c. c. of blood-stained serum, whether stained ante-mortem or post-mortem could not be determined. Left lung compressed into small compass at lower part of pleural cavity. Right lung somewhat congested but normal, weight 700 grams. Left lung very small and carnified, weight 285 grams. In wall of aneurismal sac were found the end of left clavicle, manubrium of sternum, and a portion of the first, second, and third ribs on left side, all considerably eroded. Heart, aorta, and aneurism with contents weighed 2,340 grams. Liver very large and showed chronic passive congestion, typical "nutmeg" liver, weight 1,740 grams. Right kidney shows congestion, weight 250 grams. Left kidney also shows congestion, weight 255 grams. Spleen slightly enlarged and shows chronic passive congestion, weight 270 grams. Pancreas normal, weight 130 grams. Brain normal, weight 900 grams.

J. D. F.
W. C. R.
R. M. W.

Rupture of the heart.

J. P.; age, 38; nativity, Maine; admitted to the United States Marine Hospital, Portland, Me., December 28, 1903; died March 25, 1904.

HISTORY.—Patient, when admitted, complained of asthma, with fluttering of heart, shortness of breath, vertigo; at times would fall during attacks; patient able to pass his water; bowels open; appetite good. Examination showed a diastolic murmur at base of heart; carotid pulsation very distinct; slight amount of albumin in urine. Patient was put upon treatment of caffeine and

complete rest. Following this, sparteine, digitalis, and strychnine were tried, extending over a period of two weeks; on two or three occasions the patient had attacks of dyspnoea, with cyanosis, and suffered extreme anguish, the symptoms being those of angina pectoris. Salicylate of theobromine (diuretine) gave more relief than anything else; morphine hypodermatically was also of great value. Death occurred very suddenly during one of these attacks. Previous to death patient had dyspnoea and pain, with severe cough. He was unable to pass his water. Oedema of lower extremities marked, abdomen distended; died March 25, 1904.

NECROPSY (15 hours after death).—Body that of a strongly developed, muscular, white male adult; rigor mortis well marked; considerable oedema of feet and legs; scrotum and penis oedematous and contained extravasated blood; slight discharge of blood from penis; superficial veins enlarged; post-mortem ecchymosis in dependent portions of body and upper part of chest; first and second toe of both feet webbed. On anterior aspect of right arm a design of a horseshoe and a band of stars at wrist, worked in red and black; on upper arm that of Goddess of Liberty and a shield; on inner aspect of left arm was that of a musician, and at wrist a clover leaf and a 5-pointed star. Bloody froth issuing from mouth; pupils moderately dilated and irregular. Body opened by a long incision from chin to symphysis pubis; muscles flabby; considerable serous fluid escaped on opening the abdomen. Chest contained a bloody serous fluid; tissues of neck infiltrated with clotted blood; trachea and bronchi filled with blood; thoracic cavity contained about 1,000 c. c. of fluid. Lungs extremely oedematous; pleuritic adhesion on left side caused tearing of the lung on removal. Weight of right lung, 1,105 grams; lower lobe very oedematous. Left lung, weight 770 grams, oedematous, and had small area of consolidation; section sank in water. Blood vessels: Coronary arteries degenerated but patulous; aorta dilated and degenerated, containing numerous calcareous plates. The vessels, heart, and pericardium were stained a deep pink. Pericardium filled with dark clotted blood. Heart very large (so-called "bovine heart"), extremely hypertrophied and dilated; weight, 1,000 grams. Left ventricle extremely hypertrophied and dilated. Right ventricle dilated; capacity, 150 c. c. of fluid. Rupture in anterior wall of right ventricle about 5 cm. in length; wall of ventricle extremely thin. Aortic, mitral, and tricuspid valves incompetent, admitting the passage of three fingers through the valves. Small round opening noted in pulmonary aorta, about one-eighth inch in diameter; appeared as if a plate of degeneration had dropped out. There was no way to account for this small round opening in vessel wall except as above; no one present had observed anything of this kind before. Abdominal cavity: Spleen hypertrophied, of a brown color, and easily torn; pulp soft; weight, 450 grams. Liver rather small; of chocolate color; tissue soft and pulpy; bleeds on section; weight, 1,560 grams. Gall bladder distended and filled with dark grumous bile. Stomach: Walls very thin and part of mucus membrane found to be digested; stomach contained about 300 c. c. of liquid. Kidneys very large and pale in color; large white kidney of Bright. Right kidney loose and movable over a space of 8 inches; capsule peeled with difficulty and tears easily; weight, 270 grams; left, in same condition; weight, 330 grams. Line between the cortical and medullary substance of both kidneys well marked. Bladder contained about 60 c. c. of fluid. Small intestines contracted and empty. Brain and cord not examined. Points of interest: Infiltration of connective tissue of neck with blood, blood in thoracic cavity, bronchi, and trachea; the heart, twice the normal size, was practically an aneurismal sac, its walls very thin, with rupture of right ventricle; the movability of both kidneys, either of which or both could have become floating kidneys. Anatomical diagnosis: Valvular disease of heart, with hypertrophy, dilatation, and rupture. Immediate cause of death, rupture of heart.

B. McV. M.
W. P. M.

Valvular disease of heart—aortic.

I.

G. H.; colored; male; age, 47; was admitted to the United States Marine Hospital, Cincinnati, Ohio, October 15 and died October 16, 1903.

HISTORY.—Complained of a dull continuous pain in thorax and abdomen, with cough, dyspnoea, and a copious expectoration of viscid mucopurulent sputum, general malaise, and loss of appetite. Has had syphilis.

PRESENT CONDITION.—His temperature was 37.1° C.; pulse, 82; feels weak; has dull, but severe pains in abdomen and thorax, with shortness of breath.

Tongue coated with heavy brown fur, and is deeply fissured. Facial expression is apathetic and listless. Respiratory movements rapid, and a sense of mucous rattling is conveyed to hand. Percussion is negative. Auscultation: Moist crepitant râles heard all over chest. Heart dullness is increased to left to mid-clavicular line and downward to sixth rib. Heart sounds at apex are distant and feeble; no apex impulse can be felt; at aortic cartilage a double murmur is heard and is transmitted to vessels of neck and down along the sternum. Abdomen distended and could not be palpated on account of tenderness. Urinalysis: Color, dark red; reaction, acid; specific gravity, 1.030; no albumen or sugar present. Was given a saturated solution magnesia sulphate, 30 c. c.; at 1 p. m. an enema, after which his bowels moved freely. Patient died the following day at 5.30 a. m.; death occurred suddenly.

Necropsy (5 hours after death).—Body that of a well-developed colored man; rigor mortis well marked; pupils dilated; has a right scrotal hernia and areas of copper-colored discoloration over skin of both tibia (syphilitic). Calvarium, brain, and meninges normal; no excess of fluid; ventricles empty and normal; slight congestion of cerebral vessels. Pleura normal in appearance; no adhesions present nor excess of fluid. Left lung normal, crepitates throughout; on section a mucous exudate is noted; weight, 450 grams. Right lung normal; weight, 495 grams. Pericardium contains no excess of fluid. Heart is markedly enlarged; ventricles and auricles contain chicken-fat clots; aorta is markedly atheromatous; the aortic leaflets are thickened and contracted; mitral orifice admits tips of two fingers, and valves are somewhat thickened. Left ventricle is enlarged, and its walls are markedly hypertrophied, and the muscular tissue shows fatty degeneration. Other valves normal. Weight of heart, 615 grams. Abdomen: Peritoneum presents nothing abnormal. The liver is markedly cirrhotic and presents a distinct hobnailed appearance and cuts with consistency of leather; weight, 2,400 grams. Spleen somewhat enlarged and is seat of cloudy swelling; weight, 400 grams. Pancreas normal. The kidneys normal; capsules strip readily; right kidney weighs 200 grams; left kidney weighs 215 grams. Stomach, normal. Lower part of ileum is the seat of a plastic inflammatory condition. The end of the appendix is also somewhat inflamed. Some plastic lymph and serum are present in abdominal cavity. No enlargement of mesenteric glands.

J. H. G.
J. W. S.

II.

A. K.; age, 47; nativity, England; was admitted to the United States Marine Hospital, Cleveland, Ohio, October 16, 1904; died May 1, 1904.

HISTORY.—Patient complained of cough, with little or no expectoration. Physical examination showed some œdema of lower extremities, veins of neck distended and pulsating, apex beat very forcible and visible over a large area; ends of fingers slightly clubbed, but no cyanosis present; pulse of high tension, but not a true Corrigan pulse; over aortic area two murmurs were heard, the systolic being louder than the diastolic.

Necropsy (14 hours after death).—Body well nourished, medium sized, white, male; rigor mortis medium; post-mortem lividity of dependent parts; considerable œdema of feet and ankles; small amount of subcutaneous fat. Thorax: Slight pleural adhesions of left side. Pericardial sac contained about 400 c. c. of straw-colored fluid, containing no flakes. Heart somewhat enlarged; weight, 610 grams; muscular tissue of right side of heart pale and fatty, left side hypertrophied and showed little or no fat, valves of right heart normal; aortic valves incompetent and covered with abundant vegetations; chordæ tendinæ normal, no arteritis present. Lungs much congested, small amount of œdema; weight of right lung, 700 grams; left, 490 grams. Abdomen: Considerable free fluid in peritoneal cavity. Omentum and peritoneum normal. Liver weighed 1,690 grams, is congested, and with fat infiltrated. Gall bladder was normal and contained about 50 c. c. dark bile. Both kidneys congested; cortex and medulla well defined; capsules stripped easily; right weighs 230 grams; left weighs 240 grams. Spleen hypertrophied and congested, with considerable œdema; weight, 460 grams. Stomach normal, but filled with straw-colored fluid. Intestines distended with gas. Bladder full of urine. Pancreas normal; weight, 80 grams. Brain and spinal cord not examined.

ANATOMICAL DIAGNOSIS.—Valvular disease of heart, aortic; chronic congestion of kidneys; fatty degeneration of liver; congestion of lungs.

H. S. M.

III.

C. L.; white; age, 55; nativity, Nova Scotia; was admitted to the United States Marine Hospital, Boston, Mass., May 19, 1904; died May 21, 1904, at 3.30 a. m.

HISTORY.—Family history, negative.

PREVIOUS HISTORY.—Severe rheumatism several years ago; syphilis fifteen years ago; was treated in this hospital from February 20 to March 7, 1904, for valvular disease of heart (aortic regurgitation and stenosis) complicated by pneumonia. The patient was discharged recovered of his pneumonia, and heart lesion improved. He returned March 19, 1904, with considerable aggravation of his cardiac trouble, the heart being greatly dilated. He was treated until May 18, 1904, when, as the uræmic symptoms began to mask all the others, he was discharged for readmission under the diagnosis of Bright's disease, granular kidney. He failed rapidly and died May 21, 1904, at 3.30 a. m.

PHYSICAL EXAMINATION.—Patient is a fairly well developed man. Tissues about face somewhat œdematous; vessels on forehead stand out well and are sclerosed; pupils respond only slightly to light and accommodation; cornea shows well-marked arcus senilis; tongue coated with whitish fur; pulsation of jugular vein on right side; carotid pulsation well marked. Lungs: On inspection the expansion appears fair and equal on both sides. Palpation: Vocal fremitus is equal on both sides. Percussion: Slight dullness in right apex. Auscultation: Slight crepitation on right side, extending up to sixth interspace. A few sonorous râles in right apex. Heart: Apex beat seen in the seventh interspace about 7 cm. to left of mammary line. On palpation slight fremitus over precordial region and point of maximum cardiac intensity corresponds to apex beat. Percussion reveals a much enlarged heart, extending from 2½ cm. each side of lower third of manubrium downward and outward to apex beat, the lower border going below xiphoid appendix. Auscultation reveals both aortic systolic and diastolic murmurs and also mitral systolic murmur. Liver: Much enlarged; lower border extends 3 cm. below lower border of ribs. Spleen not palpable, and the rest of abdomen normal. Genital organs normal. Extremities very œdematous.

NECROPSY (6 hours after death).—Body well nourished; rigor mortis well marked; suffigation profuse over posterior surface of body. On opening the abdomen the omentum is found adherent to the peritoneum; the peritoneal cavity contains 950 c. c. of clear, straw-colored fluid. In opening the chest the upper two and lower two costal cartilages are found ossified. The right pleural cavity contains 2,600 c. c. of clear, straw-colored serum, which has greatly compressed the right lung. The pleura is very adherent to the apex and posterior surface of the right lung. The right lung weighs 1,040 grams and shows hypostatic pneumonia in upper lobes. The lower lobe is œdematous; cut section sinks in water. The left pleural cavity contains normal amount of straw-colored fluid; the pleura is slightly adherent to the apex of the lung. The left lung weighs 1,045 grams and is œdematous. Pericardium contains 25 c. c. of clear, straw-colored fluid. Heart is greatly enlarged and weighs 880 grams; both ventricles filled with post-mortem clot. There is ante-mortem clot in right auricle; the aortic valve is very largely destroyed, and what remains is filled with calcareous deposit, making the edges very jagged and irregular. The aortic orifice is considerably constricted and greatly stiffened by the calcareous deposits in the valve. The mitral orifice is dilated; the mitral valves are normal. The tricuspid orifice and valve is normal. The liver weighs 2,430 grams and shows chronic passive congestion (nutmeg liver). The gall bladder is 15 cm. in length and contains bile. It extends 4 cm. beyond lower border of liver. Spleen weighs 180 grams and is cirrhotic. Left kidney weighs 450 grams; it presents late stages of large white kidney. The capsule is thickened, but not adherent. Right kidney weighs 430 grams and presents the same condition as the left. The bladder contains 25 c. c. of urine and is normal. Pancreas weighs 135 grams and is normal. Oesophagus, stomach, and intestines normal, with the exception that the vermiform appendix is 6 cm. in length, tapering to a fine point. About its middle it is bent at a right angle by a cicatricial band. The sigmoid flexure is displaced, and instead of being in the left flank is in the median line, with convexity toward umbilicus, and fully distended with gas. Brain weighs 1,435 grams and is somewhat softened. The velum interpositum is adherent.

R. M. W.
W. C. R.
W. E. K.

Aortic and mitral.

I.

J. T.; male; colored; age, 38; nativity, Tennessee; admitted to the United States Marine Hospital, Cairo, Ill., October 13, 1903; died October 14, 1903.

HISTORY.—About eight years ago, while suffering from an acute fever, his attention was first called to "heart trouble." Since that time he has been able to follow his vocation—firing steamer—the major portion of the time, being, however, disabled at intermittent periods by attacks of dyspnoea, pains of minor severity in small of back, palpitation of heart, with ascites and anasarca.

His condition on admittance was that of general functional inactivity and physical exhaustion. He said bowels had been moving very frequently during preceding week; had obtained very little sleep for several days, and had received scant attention; was immediately put to bed; bowels moved involuntarily; abdomen was distended, and he had dyspnoea to the extent that he was unable to assume recumbent posture; extremities were cold and bloodless; intellect dull; pulse very rapid, thready, and intermittent; respiration shallow and labored.

There was marked ascites, a large thorax, giving signs of considerable fluid within this cavity; greatly increased lateral heart dullness; aortic and mitral murmurs and a rubbing apex sound simultaneous with systole.

Gave morphine sulphatis, 0.01 gm., at once, and following ordered: Rx. nitroglycerine, 0.003; ext. digital. fl., 0.500; tr. strophanth., 1.500; ferri reduct., 0.500. M. et ft. tabs. No. 8. Sig.: One every three hours. Patient did not respond, and at 1 a. m. on 14th nurse found him dead.

NECROPSY (12 hours after death).—Body that of a well-developed, muscular man; rigor mortis slight, more pronounced in lower extremities; abdomen distended with fluid; penis swollen and congenitally phimosed; genitalia otherwise normal. The face was emaciated; eyes partially closed and pupils dilated. On incision scant subcutaneous adipose tissue of thorax and abdomen; abdominal muscles ill-developed as compared with other muscles of body. The left pleural cavity contained 600 c. c., the right 400 c. c., of fluid of thin consistency. Pericardium contained 300 c. c. of fluid. Heart weighed 653.2 grams, occupied a great portion of left chest cavity; cardiac vessels engorged; fat deposits covered entire external cardiac surface. The walls of the left ventricle were 4 cm. thick, containing ante-mortem clot; walls of right ventricle 1.5 cm. thick; both auricles dilated. All valves were functionally inadequate, owing to edges of flaps being indurated and not permitting perfect closure—this especially true of aortic and mitral valves. Left lung displaced by heart to posterior part of cavity; weight, 397.6 grams; tissue contained some small caseous masses; right lung presented numerous hæmorrhagic areas and tubercular nodules; weight, 767 grams. Gall bladder distended and containing 40 c. c. bile, of thick consistency. Weight of liver, 1,193 grams; tissue normal. Spleen showed chronic enlargement; weight, 441 grams. Left kidney weighed 398 grams; easily divested of capsule, and was histologically normal, except parenchymatous enlargements. After some difficulty the right kidney was located, not lateral to spine, but lying close to body of vertebrae, small (weight 28 grams), and evidently functionless. Blood vessels of omentum engorged; intestines and stomach were in healthy condition. Bladder normal, and contained 50 c. c. urine.

T. H. D. G.

II.

W. M.; age, 26; nativity, England; admitted to marine ward of the St. Francis Xavier's Infirmary, Charleston, S. C., January 26, 1904; died February 10, 1904.

HISTORY.—Had never been seriously sick before, and had been following his usual avocation as ordinary seaman up to a few hours before admission to hospital; had been suffering from shortness of breath on exertion, with weakness and slight cough, for past two months, and had noticed his feet swelling for a day or two; poor appetite, nausea, and sleeplessness.

Physical examination showed enlarged heart with diseased aortic and mitral valves; face and feet somewhat swollen; great anæmia, engorgement of lower lobes of both lungs, most marked behind, with moist râles over other portions of chest. A mild degree of dyspnoea; pain near left nipple; nausea; temperature 38.6°, pulse 102.

TREATMENT.—Absolute rest in bed with milk diet; nitroglycerin with strychnine for cardiac condition; heroin with terpin hydrate p. r. n. for cough. After a few days a light diet was ordered, but, owing to the almost incessant nausea, was stopped and milk with "Panopepton" substituted, the milk being diluted with Apollinaris or lime water or partially peptonized. After a short period of improvement, during which time he was able to get up and walk about, all conditions being better, the swelling of face and feet returned, and eventually a general oedema occurred. The usual remedies failing to give relief, he grew rapidly worse and died very suddenly on February 10, 1904. His temperature, which had run a very low course, during the last three days never rose above 35.5°.

NECROPSY (14 hours after death).—Body poorly nourished; post-mortem lividity marked; rigor mortis slight; pupils dilated; brain and membranes, vessels, and sinuses appeared normal, weight of brain 1,500 grams. Heart weighed 600 grams, enlarged; aortic valve incompetent and thickened, the edges being bound down by adhesions; mitral valve incompetent, both ventricles hypertrophied; pericardial sac contained 200 c. c. of fluid; thoracic aorta showed atheromatous patches; abdominal aorta normal; general venous engorgement. Left lung weighed 700 grams; some fluid in pleural cavity, but no adhesions. Right lung weighed 900 grams; the pleural cavity showed signs of an old inflammation, the whole sac being adherent. Abdominal cavity contained 1,500 c. c. of fluid. Stomach small and contracted, walls thickened, pyloric and cardiac orifices normal. Small intestines distended with gas; large intestine empty. Appendix vermiformis normal. Liver congested, very dark in color, weighed 1,360 grams; gall bladder and ducts distended with bile mixed with blood. Spleen small; capsule somewhat thickened; weight 110 grams. Pancreas normal; kidneys appeared healthy to macroscopic examination; each weighed 200 grams. Ureters normal. Both suprarenal bodies were in a state of calcareous degeneration, all structural appearances being lost, so that they appeared as deposits of lime upon the kidneys. Bladder, prostate, and other organs appeared normal.

F. F. S.

III.

A. F.; white; male; age, 40; born in Germany; single; marine fireman; admitted to the United States Marine Hospital at Chicago, Ill., August 14 and died August 25, 1903.

HISTORY.—Father and mother had poor health, and both dead; had fever (malarial) in Rio Janeiro; had gonorrhœa and symptoms of constitutional syphilis, yet denies having ever seen a primary sore; had subacute articular rheumatism at intervals for about eighteen months. About two months ago he had attacks of dyspnoea and palpitation of the heart. This improved and got worse at intervals, until on admission he could scarcely walk without distress. At the out-patient office a double murmur was heard at the aortic area and a systolic at the mitral. After a rest in bed the mitral sound became approximately normal, but later the murmur reappeared, and toward the last all the sounds of the heart were replaced by loud murmurs. On admission he was at once put to bed and given: Tr. digitalis, 6 c. c.; strychn. sulph., 0.02 gram; aquæ q. s. ad 50 c. c. Sig. 5 c. c. every three hours, when awake. The next morning he had slept and his breathing was better. For the next day or so he appeared to be improving. Then he began to stay awake at night, being awakened by a sense of suffocation as soon as he fell asleep. This became more marked, and was not obviated by cautious use of morphine. The dyspnoea progressively became worse, the feet began to swell. At this time albumen and casts appeared in the urine. In twenty-four hours, between morning sick call, August 24 and August 25, a great change for the worse was noticed. The temperature sank to 35.4°, and he was sweating and very short of breath and insisted on sitting by the open window. The dyspnoea continued to increase, and he was ordered a hypodermic every hour of strychnine sulphate, 0.001 gram; glycerin, 0.0005 gram; atropine sulphate, 0.0005 gram. By 2 a. m. his suffering was intense; and as a last resort he was bled 500 c. c. This appeared to relieve him for a time, and he fell asleep. At sick call, August 25, he was found propped up in bed, half asleep and cyanosed. He was very restless and frequently changed his position. About 11 a. m., while sitting on the side of the bed, leaning against a chair, he fell over backwards, dead.

congestion in dependent portions; œdema of hands, legs, and ankles; hernia right side, considerable yellow fluid in tunica vaginalis, hernial sac projects down about 4 inches below internal ring. Lungs: Very black, œdematous, fluid in the pleural cavities. Post-tracheal glands enlarged and black. Right lung: Adherent all around; weight 1,180 grams. Left lung: Adhesions to pleura; weight 1,160 grams. Appendix: About 3 inches long; mesoappendix short and twisted; appendiceal concretion present. Right kidney: 190 grams in weight, capsule strips off readily, slightly congested. Left kidney: 180 grams in weight, capsule strips off readily, slightly congested. Liver: Weight 2,020 grams; gall bladder adherent to colon; about 75 c. c. of brownish-green fluid in gall bladder. Bladder: Contains about 60 c. c. of urine. Spleen: Weight 370 grams; dark slate color, edge lobulated. Heart: Weight 900 grams; very little fluid in pericardium; ante-mortem and post-mortem clots throughout heart. Pulmonary semilunar valve normal; vegetations on one leaflet of aortic valve; ascending aorta and arch greatly dilated; wall 1 cm. thick in places.

N. R.
C. E. B.

Mitral.

I.

A. O.; age, 42; nativity, Norway; admitted to the United States Marine Hospital, Boston, Mass., September 9, 1903, and died October 26, 1903.

HISTORY.—Father committed suicide; mother dead, cause unknown; gonorrhœa and bubo once; hard chancre six years ago; was treated in this hospital on two previous occasions during the last three months for valvular disease of heart, mitral regurgitation, and discharged improved. On September 9, 1903, he returned to the hospital with old heart trouble and in very bad condition; very weak; had a great deal of pain anteriorly and posteriorly in region of heart; great dyspnœa; legs were badly swollen and painful.

PHYSICAL EXAMINATION.—Normal area of cardiac dullness increased; systolic murmur best heard at fourth interspace left side, transmitted to left. Apex beat forcible and diffuse. Legs, hands, abdomen, feet, and external genitals very œdematous. Patient steadily declined, œdema and dyspnœa gradually increasing, in spite of all medication, and died suddenly October 26, 1903, at 4 p. m.

NECROPSY (18 hours after death).—Body: Hands, legs, feet, abdomen, and external genitals enormously swollen; rigor mortis absent; no discoloration of skin. Upon removal of calvarium membranes were found congested; brain was normal and weighed 1,270 grams. Tissues on section drip serum. Anomaly of round ligament of liver which passes from left to right. Thorax: Right pleural cavity contained 3,200 c. c. of serosanguinolent fluid and the remains of a greatly shrunken right lung. Left pleural cavity contained about 100 c. c. of serous fluid, and pleura was very adherent throughout. Right lung greatly shrunken and presents some congestion in lower lobe; weight 680 grams. Left lung diminished in size and presents some hypostatic congestion in lower lobe; weight 480 grams. Pericardium was slightly thickened and adherent and contained 50 c. c. of serous fluid. Heart was hypertrophied; walls of ventricles very much thickened, especially left ventricle. Tricuspid and mitral valve openings were considerably dilated, admitting four fingers. Mitral valve thickened and incompetent. Aortic valve showed contraction of valvular segments and patches of vegetative ulcerations; deposits of lime salts both at the valvular edges and in forms of plaques in ascending portion of aorta; large ante-mortem clot filled right ventricle; weight of heart 330 grams. Abdomen: Stomach and intestines normal. Liver presented a "nutmeg" appearance with chronic hypostatic congestion; weight 1,150 grams. Spleen presented hypostatic congestion; weight 170 grams. Right kidney showed chronic productive (interstitial) nephritis; weight 230 grams. Left kidney presented congestion; weight 250 grams. Ureters were normal. Bladder contracted and contained small amount of urine. Pancreas was normal..

J. D. L.
W. C. R.
R. M. W.

II.

W. B.; age, 61; nativity, Germany; admitted to the United States Marine Hospital, San Francisco, Cal., January 15, 1904; died January 20, 1904.

HISTORY.—Has not been well for long time, has dyspnoea, profuse expectoration, weakness, and no appetite; crepitant and sibilant râles present over whole chest; area of heart dullness increased. A mitral systolic murmur is heard over apex of heart; it transmitted toward the axilla. The liver is enlarged, extending two finger breadths below margins of ribs. The veins of both legs are dilated. The specific gravity of the urine is 1.026; there is no albumen or sugar present.

The patient's dyspnoea gradually became worse, cyanosis was marked, and there was ascites and oedema of the lower extremities. He died from exhaustion 2 a. m. January 20, 1904.

NECROPSY (9 hours after death).—Length of body, 5 feet 4 inches. Tattoo marks (anchor) on right wrist; ecchymotic spots size of a quarter dollar on chest; rigor mortis not well marked. Brain: Weight, 1,400 grams; tissue apparently normal, although it cuts with more than normal resistance. The subcutaneous fat is abundant, and there is also a large amount of fat in the omentum. The peritoneum is much thickened, strong fibrous bands running through it. The abdominal cavity contains considerable fluid. The small intestine is of grayish-red color, the appendix is small and has its own mesentery, and its blood vessels are engorged. The transverse colon is small and collapsed. Heart: Weight, 600 grams; the leaflets of the tricuspid valve are thickened, those of the mitral valve are hard, nodular, and contracted; there is a small mixed clot in the left ventricle. The wall of the right ventricle is 1½ cm., of the left ventricle 2 cm. There are a few small atheromatous spots in the aorta. The left lung bound down by separable adhesions to surrounding structures; weight, 450 grams; it is crepitant throughout, and the tissue is normal with the exception of a slight congestion at the base. Right lung also bound down by separable adhesions; weight, 535 grams; condition of tissue resembles left lung. Spleen: Weight, 165 grams; color of external surface, brown, mottled with yellowish white; capsule thickened and adherent to pulp, which is of a deep-brown color; trabeculae prominent; tissue cuts with increased resistance. A small supernumerary spleen is found attached to the lower surface of the spleen by a short mesentery. The suprarenal capsules are apparently normal. Left kidney: Weight, 200 grams; capsule nonadherent; tissue cuts with increased resistance; pyramids prominent; cortex narrow, of a reddish color, showing slight yellow striations. Right kidney: Weight, 160 grams; it is similar in every respect to the other kidney. Bladder empty, wall not thickened; urethral normal. The walls of the stomach are thickened, and the mucous membrane presents minute hemorrhages. The walls of the small intestines are much congested. The tissue of the pancreas cuts with increased resistance and small hemorrhages are present between its lobules. Liver: Weight, 1,720 grams; color on section, brown, with a bright yellow shade; tissue is greasy to the touch and cuts with increased resistance.

W. G. S.

III.

H. S.; age, 21; nativity, Wisconsin; admitted to the United States Marine Hospital, Cleveland, Ohio, April 4, 1904; died April 24, 1904.

HISTORY.—Patient complains of malaise for past two weeks. April 2, 1904, had severe headache, backache, and joints became painful; some nausea; but did not vomit; acceleration of heart action bothered him considerable; general chilly feeling, with some sore throat and cramps in bowels; severe pain in cardiac area.

Physical examination showed a body poorly nourished; apex beat visible over a large area; face and lips somewhat cyanotic. On palpitation the cardiac impulse is strong, but pulse soft and easily compressed. On percussion the general cardiac dullness is increased; balance of thorax negative. A blowing systolic murmur is heard at apex with accentuation of second pulmonic sound.

NECROPSY (6 hours after death).—Tall, white male; body poorly nourished; post-mortem lividity of dependant parts; considerable oedema of feet and ankles; very small amount of subcutaneous fat. Thorax: No pleural adhesions present. Visceral and parietal pericardium adherent throughout with fibrous plastic material; no free fluid in sac. Heart somewhat enlarged, muscles soft

and flabby; weight, 570 grams. Right heart somewhat distended and filled with post-mortem clots. Valves of right heart normal. Mitral valve incompetent and shows calcareous vegetations. Aortic valves, normal; chordæ tendinæ, normal; no arteritis present. Lungs congested and oedematous; the right weighs 1,000 grams; the left, 1,000 grams. Some free fluid in peritoneal cavity. Omentum and peritonium normal. Liver weighs 2,600 grams. It was dark red on section, and oedematous. Spleen weighed 120 grams and was firmer than normal. Gall bladder contained about 75 c. c. of bile. Kidneys normal; right weighs 150 grams; left, 195 grams. Stomach apparently normal. Intestines filled with gas. Bladder normal, contained some urine. Pancreas normal, weighs 85 grams. Brain and spinal cord not examined.

ANATOMICAL DIAGNOSIS.—Chronic rheumatism; valvular disease of heart mitral; adherent pericardium; myocarditis.

H. S. M.

DISEASES OF THE KIDNEYS.

Chronic nephritis.

I.

F. J.; age, 44; nativity, Norway; color, white; admitted to the United States Marine Hospital October 21, 1903; died October 24, 1903.

HISTORY.—Family history negative; syphilis twelve years ago; gonorrhea ten years ago; pneumonia three years ago; about five months ago had an attack with diarrhea, general pains, chills and fever; present sickness began about three weeks ago with symptoms like that last experienced; patient's mental condition not clear, and history difficult to obtain; was treated in two local hospitals before applying for admission to the marine hospital.

CONDITION ON ARRIVAL.—Unable to walk; dyspnoea; complaint of pain in back and thighs; diarrhea; large bed sore over sacrum; indefinite macular rash on back, sides, and extensor surfaces of arms; small crusting lesion on penis; skin dry and scaling; moist râles in bases of lungs. Later examination of urine showed large amount of albumin.

All symptoms grew more pronounced, except diarrhea, and death occurred at 4.30 p. m., October 24. The temperature was subnormal during the period the case was under observation.

NECROPSY (19 hours after death).—Body somewhat emaciated. Skin dry, rigor mortis and post-mortem lividity well marked; pupils moderately dilated; large decubitus over sacrum; small crusted lesion on dorsum of penis. The calvarium removed and extensive adhesions are found between meninges and inner table for about 3 cm. on either side of the longitudinal sinus. The weight of the brain is 1,500 grams. The anterior mediastinum exposed by removal of the sternum. The lungs do not meet in the median line, the left being considerably retracted to the left, the right firmly attached to the lower part of the sternum. The pericardium is strongly adherent to both lungs, sternum, and diaphragm. Its layers are thickened and adherent to the heart superiorly, and there is scarcely any fluid in the cavity. The heart weighs 322 grams; it cuts with normal resistance and its muscular tissue is pale brown in color. The aortic and pulmonary valves are competent to the water test. The mitral orifice admits three fingers; the tricuspid five finger tips. Both ventricles contain large goose-fat clots which extend into the aorta and pulmonary artery. Immediately above the aortic valves occurs a transverse, hardened plaque in the aortic wall, ulcerated into the lumen and adherent to the goose-fat clot. The right lung is strongly adherent to the parietal pleura all over by fibrous material. It crepitates normally in the upper lobes, and to a lesser extent in the lower lobe. Section shows considerable bloody frothy fluid in the lower lobe. Weight of right lung 765 grams. The left lung weighs 680 grams. It is adherent to its parietal pleura by recent fibrinous adhesions, easily separable. Section similar to that of right lung—normal above, oedematous below. The great vessels and nerve trunks are normal, except aorta previously described. The diaphragm adheres to the bases of the lungs, to the right by fibrous, to the left by fibrinous bands. The intestines are moderately distended with gas. The peritoneum is everywhere smooth and shining; no evidence of inflammation is present. The great omentum is normal. The spleen is of normal size and weight. The external surface is bluish red and wrinkles easily. It cuts

with slight increase in resistance; the section is rather dry and shows some increase of interstitial tissue. The kidneys are enormously enlarged; the right weighs 375 and the left 405 grams. The perinephritic fat is much diminished. The external surfaces are very pale, smooth, and the capsules are nonadherent. There is much diminished resistance on section, which is pale yellow in the cortex and medulla, except the pyramids, which are darker. The tissue is very friable and soft. The urinary bladder contains about 100 c. c. of turbid urine. A permeable stricture is present in the membranous urethra; the other organs of generation are normal. The rectum contains considerable semifluid fecal matter. The duodenum shows congestion and hemorrhagic areas in the mucous membrane of its ascending portion. The stomach is dilated with gas, and also contains some liquid material of light brown color. The mucous membrane along the greater curvature is congested and ecchymotic. The gall ducts are patent and the gall bladder contains a moderate amount of fluid bile. The liver weighs 1,970 grams, is enlarged, smooth externally, and rather pale in color. It cuts with diminished resistance, the section being mottled red and yellow and generally pale, with fatty areas; there are no abnormal adhesions. The pancreas weighs 157 grams. On section the resistance is normal, but the cut surface shows interstitial hemorrhages throughout. The solar plexus is normal. The mesentery exhibits a few slightly enlarged lymph glands. The first part of the jejunum shows congestion of the mucous membrane and hemorrhagic areas. In the last 2 or 3 feet of the ileum the mucous membrane is greatly swollen and congested and uniformly hemorrhagic. No ulcers are present, but there is much semiliquid fecal matter. The large intestines are normal except for the presence of the same quality of fecal matter. The vermiform appendix is normal. The great vessels are apparently normal.

ANATOMICAL DIAGNOSIS.—Decubitus over sacrum; crusted lesion on penis; localized cerebral pachymeningitis; acute myocarditis; chronic adhesive pericarditis; tricuspid insufficiency, slight; goose-fat clots in ventricles; retraction of left lung; fibrous adhesions between pericardium, heart, lungs, sternum, and diaphragm; arterio-sclerosis and ulceration in beginning of aorta; chronic fibrous pleuritis, right; acute fibrinous pleuritis, left; pulmonary oedema, bilateral; acute and chronic phrenitis; slight fibrosis of spleen; chronic parenchymatous nephritis with large white kidneys; organic stricture of urethra; acute enteritis; acute gastritis; acute hepatitis with fatty degeneration; acute hemorrhagic pancreatitis.

C. R.
W. G. S.

II.

A. G. K.; age 43; nativity, Finland; color, white; admitted to the United States Marine Hospital, San Francisco, Cal., December 16, 1903; died December 17, 1903.

HISTORY.—This patient was brought to the hospital in the ambulance, and his mental condition was such that all that could be gotten out of him was that he had been sick two weeks and had had a chill the day before. Shortly after being put to bed he was seized with convulsions of epileptiform character, which lasted for several minutes. Urinalysis showed a large amount of albumin, about 14 per cent by the Esbach test; was unable to hold anything on his stomach on account of coughing; expectorated a large amount of mucopurulent matter. Several other convulsive attacks were experienced, followed by jerking movements of the left hand and arm and face. He was given hot baths, pilocarpine, and saline solution, but scarcely any benefit resulted. Death occurred the following day at 4.25 p. m. Owing to the patient's critical condition it was impracticable to make a complete physical examination.

NECROPSY (18 hours after death).—Body fairly well nourished; rigor mortis and post-mortem lividity present; skin of face yellowish in color. The calvarium removed, and the condition of the skull cap, the brain case, the sinuses and vessels, the brain and its membranes noted, and all appeared to be normal. The brain weighs 1,280 grams. On removing the sternum the right lung is seen to come to the median line, while the left is retracted. The peribronchial lymph glands are enlarged and show anthracosis. The pericardium is strongly adherent to both lungs. When opened a large amount of clear serous fluid escapes. The parietal pericardium is thickened and adherent to the visceral layers above. When the heart is removed the blood is found to be very fluid, and the outer surface of the heart and inner surface of the pericardium

to have lost their shining appearance and become greatly roughened by partially organized inflammatory exudate, the latter giving the "bread-and-butter" appearance. The heart is greatly enlarged, weighing 560 grams. It is broad laterally. A chicken-fat clot extends from the left ventricle into the aorta. The myocardium cuts with increased resistance, showing a pale surface and increase of connective tissue. The aortic and pulmonary valves are competent to the water test. The mitral orifice admits three fingers; the tricuspid four. The endocardium appears everywhere smooth except on the mitral valve, where there are several atheromatous patches. The tricuspid valve is normal. The myocardium of the left ventricle is much increased; that of the right is about normal. The mucous membrane of the trachea and bronchi is congested. The right lung weighs 880 grams. The external surface is mottled gray and black. The layers of the pleura are adherent all over by fibrinous adhesions, except at the base, where firm fibrous bands connect the lung with the diaphragm and chest wall. There is crepitation in the middle lobe and anterior portion of the upper lobe, but none in the lower two-thirds of the upper part of the upper lobe posteriorly, this being consolidated. Crepitation is diminished in the lower lobe. Section of the consolidated portion shows increased resistance and a grayish-red color. Section of the lower lobe shows considerable bloody, frothy fluid. The posterior surface of the lower lobe is dark grayish red. Fibrinous bands are present in the interlobular fissures. The left lung weighs 535 grams. Its external surface resembles that of the right lung. The layers of the pleura are similarly adhered—by fibrinous exudate superiorly and by organized fibrous bands inferiorly. Fibrinous bands also occur in the interlobular fissure. Crepitation good throughout, except in the posterior portion of the lower lobe, where it is diminished. Section of the upper lobe is somewhat frothy; of the lower lobe very bloody and oedematous. On the convex border of the arch of the aorta there is a saccular dilatation, size of small hen egg, the walls of which are thinner than those of the aorta proper, and the endothelium roughened, hemorrhagic, and in places eroded. The ascending portion of the aorta contains a number of atheromatous plaques. The descending portion and entire thoracic aorta show numerous atheromatous patches, the endothelium being hemorrhagic and roughened in places and extensively ulcerated in others. No clots adhere to any of these eroded areas. The intima of the innominate artery also exhibits areas of atheromatous change. The nerve trunks are normal. The diaphragm on the right side reaches to the fifth rib; on the left side to the sixth. It is firmly adherent to the bases of the lungs. Abdomen: The great omentum is retracted to the left and contains considerable fat. It is firmly adherent to a portion of the anterior abdominal wall, also in the left hypochondriac region and to the spleen, and by a single fine fibrous band to the cæcum. The spleen is strongly bound down posteriorly. It weighs 68 grams and is diminished in size. It is hard in consistency, pale gray in color, somewhat roughened on the surface, and the capsule does not wrinkle easily and shows hemorrhagic areas beneath. On section there is considerable increase in resistance, firmness of pulp, pale-cut surface, and proliferation of interstitial fibrous tissue. The right kidney weighs 220 grams and is enlarged. It is surrounded by considerable fat. There is a deep depression on the convex border. The surface is pale, and subcapsular hemorrhages and yellowish areas of large size are present. The fibrous capsule strips with some difficulty, leaving a fine granular surface. Section shows increased resistance, relative darkness of the pyramids, light yellowish color of cortex and medulla, and fairly distinct cortical markings. The test for amyloid degeneration was tried and gave negative results. The left kidney is very small and embedded in a quantity of fat; it weighs only 50 grams. The surface is very nodular and irregular. The fibrous capsule strips with difficulty and shows a granular and hemorrhagic surface. Section shows increased resistance, darkened color of the pyramids, diminished cortex, and excess of fibrous tissue. The suprarenal capsules are apparently normal. The urinary bladder contains a small amount of purulent fluid. The organs of generation, rectum, and duodenum are normal. The stomach shows congestion of the mucous membrane, with hemorrhagic areas and glairy mucous. The gall bladder and the gall ducts are normal. The liver weighs 1,635 grams. It is enlarged, and the surface is somewhat irregular, showing bands of white fibrous tissue and lighter areas. There are strong and extensive adhesions superiorly. On section there is increased resistance, pale surface with yellowish areas, and increase of fibrous tissue. On the surface of the left lobe there occurs a large and light-yellowish area, which penetrates deeply and cuts with

diminished resistance. The pancreas weighs 75 grams and is normal. The solar plexus, mesentery, small intestines, and vermiform appendix are normal. The lumen of the transverse colon is much contracted. Otherwise the large intestines are normal. The abdominal aorta is in a condition similar to that of the thoracic aorta.

ANATOMICAL DIAGNOSIS.—Anthracosis of peribronchial lymph glands; pericarditis with effusion and adhesive inflammation; hypertrophy of the left ventricle; chronic myocarditis; atheroma of mitral valve; acute bronchitis; acute and chronic pleuritis; lobar pneumonia of right upper lobe; pulmonary œdema; sacular aneurysm of the arch of the aorta; arterio-sclerosis of thoracic and abdominal aorta and other large branches; chronic phrenitis; omental adhesions; chronic splenitis; chronic interstitial nephritis; acute gastritis; hepatic hypertrophic cirrhosis.

C. R.
W. G. S.

III.

J. D.; age, 27; nativity, Massachusetts; admitted to the United States Marine Hospital, San Francisco, Cal., November 16, 1903; died November 27, 1903.

HISTORY.—The patient stated he used alcohol to excess; that he had been suffering from "spells," when he would have a headache, spasms of his arms and legs, nausea, and vomiting. These fits would end in a state of coma, from which he could not be aroused.

EXAMINATION.—Skin pale, of yellow hue; conjunctivæ have a yellowish cast; râles heard over the apex of right lung; heart sounds normal; liver and spleen not enlarged. Temperature, 36.5° C.; pulse, 80. Urine: Specific gravity, 1.029; no albumen or sugar present; bile present in large amount; plasmodium of malaria; æstivo autumnal form found in blood.

November 24 the patient had delirium for several hours. The next day he had three attacks of a semicomatose nature, lasting one-half hour each, during which he made much noise and thrashed around with his arms. On November 26 he passed into a state of complete coma, in which he died at 1.15 a. m. on the 27th.

NECROPSY (10 hours after death).—Height, 5 feet 6 inches; body fairly well nourished; abrasions on left elbow and hip; rigor mortis present. Brain: Weight, 1,450 grams; tissue apparently normal. No gas escapes on opening abdomen; small intestines stained a yellowish color, filled with gas; appendix long, has several concretions in it, one at distal end, no evidence of inflammation of its tissues; omentum contains considerable fat; large intestines distended with gas; color grayish. Lungs: Overlap the heart; pericardial sac contains a small quantity of yellowish fluid. There is a quantity of fat surrounding the heart; weight of the heart, 200 grams; valves of right side normal; thickness of wall of right side, $\frac{1}{2}$ cm.; of left side, 1 cm.; the edges of the mitral valve are roughened; aortic valves normal; color of heart muscle bright red; of the endocardium, reddish brown. Right lung: Weight, 325 grams; small adhesions to chest wall at apex; tissue crepitant throughout, except at apex, where there is a small collection of tubercles and a caseous mass of the size of a pea. Left lung: Weight, 285 grams; crepitant throughout; tissue apparently normal. Spleen: Weight, 65 grams; cuts with increased resistance; tissue very dark red; trabeculae well marked; pulp firm. Left kidney: Weight, 110 grams; capsule slightly adherent to kidney substance; tissue cuts with increased resistance; cortical layer very thin; color pale red, streaked with yellow; pyramids prominent. Right kidney: Weight, 105 grams; condition same as left. Liver: Weight, 1,060 grams; color dark red; cuts with increased resistance and dark-red blood oozes out on section; gall bladder filled with dark-brown bile; gall ducts patent. Stomach and small intestines normal; pancreas normal; bladder contains about 250 c. c. of urine; tissue in good condition; urethra normal.

W. G. S.

IV.

E. H.; age, 56; nativity, Germany; transferred to the United States Marine Hospital, San Francisco, Cal., from San Diego, Cal., January 12, 1904; died February 5, 1904.

HISTORY.—Good health until three months before admission. Sickness began with shortness of breath and swelling of feet. He has headaches, loss of appe-

tite, slight cough, weakness, and frequent urination, in addition to the above symptoms. Examination shows a systolic murmur present over apex of heart; numerous râles in both lungs; abdomen tympanitic; prostate enlarged; large ulcers in throat, which are apparently syphilitic. Urine: Specific gravity, 1.020; light color, strong odor, cloudy sediment in large amount; albumen present in great quantities. Pulse, 92; respiration, 20; temperature, normal. The patient's condition improved and his symptoms disappeared. January 29, 1904, he left the hospital for a few hours, without permission, and drank a large quantity of whisky. He never recovered from this debauch, for his symptoms returned in an exaggerated form and he had delirium, nausea, and vomiting, trembling of the limbs, and finally died February 5, 1904, at 1.20 p. m.

Necropsy (22 hours after death).—Body fairly well nourished; length, 5 feet 7 inches. Evidence of old fracture of the ninth rib, right side; costal cartilages partially ossified. Left lung: Weight, 470 grams; tissue apparently normal. Right lung strongly bound down to chest walls by adhesions; weight, 590 grams; moderate crepitation; lower lobe congested and oedematous. Heart: Weight, 800 grams; muscle walls thickened; pale, with much fat between fibers; clots in both ventricles; leaflets of mitral valve thickened; first portion of aorta dilated; walls show atheromatous spots. Omentum adherent to anterior wall of abdomen. Spleen: Weight, 145 grams; tissue apparently normal. Left kidney: Weight, 220 grams; capsule strips with difficulty; cortical portion thin; color light red, with indistinct yellowish markings; pyramids well marked and of a dark color. Right kidney: Weight, 250 grams; tissue in similar condition as left kidney. Suprarenal capsules normal. Bladder contains 300 c. c. of turbid urine; mucous membrane pale, with hemorrhagic areas. Prostate enlarged. Walls of stomach and intestines normal. Appendix 8 inches long; has its own mesentery. Liver: Weight, 1,850 grams; color on section light reddish-brown, with large areas of light yellow. Gall bladder full of bile; ducts patent.

W. G. S.

V.

P. A.; colored; age, 55; nativity, Virginia; admitted to the United States Marine Hospital, San Francisco, Cal., May 26, 1903; died August 31, 1903.

HISTORY.—After having an attack of enteric fever in New Zealand five months ago, as he was convalescing he awoke one morning and found he could not speak or move his right arm and leg. Speech gradually returned, so that in one and one-half months he was able to talk. The right side of his body remained paralyzed for three months; the patient then gradually recovered the use of his hand and leg. About twenty days ago he noticed legs were beginning to swell, and the swelling has continued to increase up to the time of admission. About three months ago he had a number of hemorrhages from the nose. He now has a severe pain in the frontal region and behind the right ear. For the last twenty days the patient has been vomiting after eating, and states he can keep nothing but water in his stomach. He has to pass his urine four or five times every night. He has considerable dyspnoea and saliva is constantly dribbling from his mouth.

EXAMINATION.—General anasarca present; tongue good color, broad and thick, especially at tip; teeth decayed; the heart extends considerably beyond the left border of the nipple line; a loud blowing systolic murmur is heard over the mitral area; râles are heard over the entire chest. Abdomen: Convex tympanitic at dome; dull in flanks and above pubes; fluctuation present; skin pits on pressure. Right hand and arm cold and oedematous; great loss of muscular power; atrophy of muscles; patient can only move arm by jerks. Patellar reflex increased in both legs; entire loss plantar reflex right foot; Babinski's reflex present left foot. Hyperæsthesia over entire body; tactile sense lost on right leg and arm. Right side of body shows delayed reaction to heat and cold. Temperature, 37.5° C.; respiration, 24; pulse regular, fairly strong; arteries hard. Urine: Specific gravity, 1.010; acid reaction; color, light yellow; one-tenth of 1 per cent albumen present; no sugar or bile; the microscope shows hyaline and granular casts; quantity of urine passed in twenty-four hours, 600 c. c. By the administration of diaphoretics and cathartics the dropsy in time entirely disappeared. He was then given tonics and diuretics, and by June 30, 1903, his urine had increased to 1,700 c. c. a day and the albumen diminished to one-fortieth of 1 per cent. There was, however, very little improvement in the hemiplegia. About the middle of August he lost his appe-

tite and began to fall rapidly. He became very weak, and toward the end became comatose. He died from exhaustion August 31, 1903.

NECROPSY (16 hours after death).—Body emaciated; scar on right arm 5 cm. long; rigor mortis well marked; abdominal wall 1 cm. thick, very little fat present; omentum small and retracted. Brain: Weight, 1,170 grams; walls of arteries at base of brain hard and thickened; patches of yellowish sclerotic material occur throughout these vessels. There is a mass of degenerated tissue in the corpus striatum. This mass is of a yellowish-black color, the size of a bean and of a gelatinous consistency. Costal cartilages ossified. The pericardial sac contains a small quantity of yellowish fluid. The heart is much enlarged; weight, 780 grams; the right ventricle contains a white clot; its wall is 1.2 cm. thick. The wall of the left ventricle is 2.5 cm. thick. The mitral valve is thickened and roughened and orifice dilated. The heart muscle is of a bright-red color and cuts with normal resistance. There are separable fibrous adhesions over pleural surfaces of both lungs. Combined weight of lungs, 1,400 grams; tissue apparently normal. Spleen: Weight, 200 grams; brick-red color; trabeculae prominent. Left kidney: Weight, 110 grams; capsule strips with difficulty, leaving roughened and granular surface. The kidney cuts with great resistance; the pelvis is filled with fat; the cortex is nearly obliterated; connective tissue abundant, forming layers between pyramids; the pyramids are of a red color, streaked with white. Right kidney: Weight, 90 grams; condition similar to left kidney. Liver: Weight, 1,750 grams; surface on section shows a number of pin-head yellowish areas; cuts with slightly increased resistance; gall bladder distended with bile; gall ducts patent. Other abdominal organs are apparently in normal condition.

W. G. S.

VI.

J. W.; age, 59; nativity, Virginia; admitted to United States Marine Hospital, Memphis, Tenn., August 18, 1903; died August 25, 1903.

HISTORY.—Family history negative.

PREVIOUS HISTORY.—Has had rheumatism; has used both alcohol and tobacco; has had gonorrhœa and chancre some time ago.

PRESENT ILLNESS.—Complains of not being able to pass his urine; passes about 10 c. c. at a time with a great deal of blood; has a great deal of pain in abdomen; feet and penis œdematous; some discharge from penis of foul odor; no history of stricture; on admission complained of a catching pain under heart, with labored respiration; bowels very loose and passes a great deal of blood at each action; no appetite; pains in region of kidneys; pulse full, tense, bounding, and frequent; cardiac action tumultuous; tongue pale and swollen; some hemorrhage from the mouth.

TREATMENT.—Elaterin, infusion of digitalis and potassium citrate, spirits frumenti and strychnia.

August 20.—Urine analysis: Specific gravity, 1.025; reaction, acid; color, pale; albumen present; sugar absent.

Patient died on the morning of August 25, 1903.

NECROPSY (24 hours after death).—The body fairly well preserved, and shows old syphilitic scars and pigmentation. Lymph glands enlarged. Brain: Weight, 1,250 grams; syphilitic deposits on dura mater. Right lung: Weight, 900 grams; hypostatic congestion. Left lung: Weight, 610 grams; very much smaller than right lung; hypostatic congestion; pleura adhered to lungs in different places and contained about 1,000 c. c. of fluid. Heart: Weight, 310 grams; left ventricle hypertrophied; sclerotic changes in vessels and deposits on valves. Spleen: Weight, 80 grams; congested and contained very dark spots. Liver: Weight, 1,200 grams; Glisson's capsule very much thickened; dark discoloration over liver; gall bladder almost empty; syphilitic deposits over liver. Right kidney: Weight, 170 grams; capsule adherent. Left kidney: Weight, 240 grams; capsule adherent. Both kidneys contain deposits, congested, and show increased connective growth. Bladder distended and mucous membrane thickened. Penis œdematous and gangrenous. Intestines distended with gas, yellowish gray in color.

W. T. B.

VII.

C. L.; age, 46; nativity, Finland; admitted to the United States Marine Hospital, San Francisco, Cal., March 3, 1904; died March 11, 1904.

HISTORY.—The patient had been sick for about a week. He complained of headache, diarrhœa, great weakness, cramps in his legs, and frequent vomiting. Examination showed that the area of heart dullness was increased; a systolic murmur was heard at the apex; pulse, 72; moist râles were present over apex of left lung; expiration loud and blowing at base of right lung; abdomen tender on pressure; skin cold, but not clammy; a few ecchymotic spots were found over chest; urine small in amount, albumen present in large quantity; microscopically showed granular, epithelial, and hyaline casts, also large number of oxalate crystals; temperature was subnormal throughout his sickness; respirations were normal until March 8, when a terminal pneumonia developed in the bases of both lungs; severe cough, with prune-juice expectoration containing diplococcus pneumonia, was present. There was dullness over the base of both lungs and rough breathing over the whole chest. He finally died from exhaustion at 1.10 p. m., March 11, 1904.

NECROPSY (22 hours after death).—Scar on nose extending from tip to inner angle of left eye; rigor mortis well marked. Brain: Weight, 1,525 grams; a great deal of congestion is present and the large vessels at base have numerous yellow atheromatous patches. Heart: Weight, 425 grams; right ventricle contains a goose-fat clot; valves of right side normal; leaflets of mitral valve much thickened and several atheromatous plaques present; aortic valve normal; heart muscle pale. Right lung bound down by strong adhesions to chest wall, pericardium, and diaphragm; weight, 755 grams; tissue very soft; upper lobe crepitant, very bloody, and has the appearance of currant jelly; lower lobe noncrepitant, tissue pulpy, tears easily, and cuts with diminished resistance. Left lung hard to remove on account of adhesions; weight, 750 grams; tissue similar to right lobe. Spleen: Weight, 115 grams; pulp soft, color dark red; suprarenals apparently normal. Left kidney: Weight, 235 grams; capsule strips easily, but takes a little tissue with it; cortical substance congested, color reddish yellow; pyramidal portion pale; pelvis contains much fat. Right kidney: Weight, 195 grams; condition similar to left kidney. Bladder contains turbid urine; walls normal. Urethra normal. Stomach: Mucous membrane shows minute hemorrhages. Intestines normal. Appendix, 4 cm. long. Liver: Weight, 1,825 grams; cuts with diminished resistance; color yellowish brown; section dry and greasy; biliary ducts patent.

W. G. S.

VIII.

H. W.; age, 69 years; nativity, Massachusetts; admitted to the United States Marine Hospital, San Francisco, Cal., January 18, 1904; died March 22, 1904.

HISTORY.—Patient stated eight days ago he had a severe chill after being exposed to a cold fog while sweating. He now has dyspnoea and coughs up a brownish sputum. He has no appetite and can not sleep at night.

EXAMINATION.—Temperature, 38.2°; pulse, 88; respiration, 40. The area of the heart dullness is increased to the left. A loud blowing murmur during the entire systole and lasting into the diastole is heard over the chest. There is dullness over the base of the left lung and the vocal fremitus is increased. Râles are also present at this point. A petechial eruption is present on the skin. Urine: Only 500 c. c. passed in twenty-four hours. It contains albumen in large quantities. The microscope shows the presence of hyaline, granular, and epithelial casts. During February dropsy developed. His legs became so large the skin broke and large quantities of water oozed out. Ulcers formed and were kept in a clean condition with difficulty. The pulse was frequently intermittent, but the tension was never great. He became very feeble in March. His mind wandered, and he was extremely weak. Several days before death the dropsy entirely disappeared.

On March 22, 1904, he passed into a state of coma, the extremities became cold, and he died at 7.30 a. m.

NECROPSY (3 hours after death).—American eagle tattooed on left forearm; star on left wrist; lower limbs œdematous; large superficial ulcer on right leg; rigor mortis not well marked. Brain: Weight, 1,325 grams; tissue apparently normal, but arteries at base show many yellowish atheromatous patches. Sternum removed; very little ossification of costal cartilages. Lungs do not meet in the middle line; pericardium bound by adhesions to each lung. Pleural cavities contain fluid in small amount. Heart: Weight, 625 grams; wall of right ventricle 1 cm. thick; valves of right side normal; wall of left ventricle 3 cm. thick; cavities of heart not dilated; both leaflets of mitral valve much thickened and infiltrated with calcareous particles, one at base of outer leaflet being

as large as a pea; inner leaflet of mitral valve much shortened; the aortic valves consist of dense fibrous tissue, filled with calcareous deposit, covered by thickened endothelium; the blood vessels of the heart are dilated, especially the veins, and there are large lumps of fat between the muscular fibers; a small atheromatous patch is present in the aorta about 1 inch above the aortic valve. Right lung: Adherent to diaphragm by separable adhesions; weight, 390 grams; the upper and middle lobes are bound together so tightly that it is difficult to find the spot where the lobes meet; the middle and lower lobes are bound by separable adhesions; color of lung on section grayish red; only a little bloody fluid oozes out; tissue crepitant throughout and apparently normal. Left lung: Weight, 340 grams; crepitant, and tissue in good condition. Abdomen opened by median incision; very little fat in abdominal walls or in omentum. Spleen: Weight, 145 grams; cuts with increased resistance; pulp hard; trabeculae prominent; vessels dilated; left suprarenal capsule firm and in good condition. Left kidney: Weight, 155 grams; there are 5 small cysts on surface filled with serum; section shows that the cortical substance on the border of kidney has nearly disappeared, so that the capsule is apparently in places attached directly to the pyramids; these are of a deep red color, the tissue between them being of a dirty gray color; pelvis filled with fat; ureter patent; right suprarenal capsule normal. Right kidney: Weight, 145 grams; condition similar to left kidney. Bladder contains 200 c. c. of turbid urine; walls normal. Organs of generation and rectum normal. Mucous membrane of duodenum and stomach congested; gall ducts patent; gall bladder contains a small quantity of dark brown bile. Liver: Weight, 1,705 grams; section shows a mottled appearance, owing to the deeply congested hepatic and anæmic portal territories; the connective tissue is increased and the vessels are dilated; tissue is dry and greasy to the touch. Pancreas, solar plexus, mesentery, intestines, and great vessels normal. Appendix 6 cm. long. Blood vessels congested, otherwise apparently normal.

W. G. S.

IX.

J. W.; colored; age, 45; nativity, Massachusetts; admitted to United States Marine Hospital, Baltimore, Md., February 12, 1904; died February 16, 1904. When admitted was in a semiconscious condition, with irregular, weak pulse, 96 per minute; respiration, 22 per minute, and of Cheyne Stokes character; temperature, subnormal. This condition continued during the four days following his admission to the hospital, with suppression of urine, increasing delirium, and increased irregularity of pulse. Urine was highly albuminous, containing many dark, granular casts. Examination of the heart elicited no murmurs, although there was decided irregularity, weakness, and loss of tone of the heart sounds. At the base of the left chest, in the anterior axillary line, many distinct, crepitant râles were heard at the end of inspiration.

CLINICAL DIAGNOSIS.—Parenchymatous nephritis; chronic myocarditis; pneumonia, catarrhal, left.

NECROPSY.—Body of a poorly nourished mulatto; height, 5 feet 7 inches; weight, approximately 128 to 130 pounds; section shows all organs in normal position and relation. The left pleural cavity is entirely obliterated by dense adhesions. The left lung is torn upon removal, and is dark, bluish red in color. The lower lobe is firm to the touch. The apex is contracted, and many small nodules can be felt upon pressure. Section shows a moderately disseminated consolidation of the lower lobe, which is dark red in color. The apex upon section is grayish red in color, is distorted by the contraction of fibrous trabeculae, which are evidently the result of a chronic tubercular process. The right pleural cavity is normal. The lung is grayish pink in color, and on section shows a cicatricial contraction of the apex, which is probably the result of a chronic fibroid tubercular process. The pericardium contains 25 c. c. of clear serum. The heart is greatly enlarged, reaching the size of two adult clinched fists. The cardiac muscle is yellowish red in color, showing evidences of fatty change, probably degeneration. The left ventricular walls are 3 cm. in thickness, and the left ventricular cavity is perhaps slightly enlarged. The valve leaflets appear slightly thickened, but otherwise are normal. The walls of the other cavities are of normal thickness. The spleen, of normal size and consistence, is bound to the diaphragm and left lobe of the liver by dense, fibrous adhesions. The liver is of normal size, is yellowish brown, and is macroscopically a fairly fatty organ. The left kidney weighs 100 grams. It is shrunken, pale, grayish red in color, and on section shows marked contraction

of the cortical substance. The capsule is partly adherent, and beneath the capsule are seen four or five small serous cysts, ranging in size from a millet seed to a split pea. The right kidney, in addition to the characteristics presented by the left organ, shows pus in the pelvis.

ANATOMICAL DIAGNOSIS.—Pneumonia, catarrhal; fibroid phthisis; hypertrophy of left ventricle; fatty degeneration of heart; chronic parenchymatous and interstitial nephritis.

H. R. C.
C. W. W.

X.

A. W.; age, 46; nativity, Virginia; admitted to United States Marine Hospital, Mobile, Ala., October 1, 1903; died November 12, 1903.

FAMILY HISTORY.—Mother died at 75 years of age, cause "old age;" father died at 50 years of age, cause of death unknown; no brothers living; 2 dead, 1 drowned at 29 years of age, and 1 died at 55 years of age, cause unknown; 1 sister living, health good; 2 sisters dead; 1 died at 35 years of age from smallpox, and 1 at 50 years of age, cause, cancer of uterus.

PERSONAL HISTORY.—Gonorrhea seventeen or eighteen years ago; ulcer of penis twenty years ago; no secondary eruption; says never had rheumatism; when admitted was very weak and unable to control flow of urine; urinating every few minutes.

Patient went from bad to worse, dying November 12, 1903, at 6.45 p. m.

NECROPSY (13 hours after death).—Body of a negro male, forty-odd years of age; greatly emaciated; rigor mortis well marked. Body opened by long incision from chin to symphysis pubis. Spleen shriveled, soft, and flabby; weighs 125 grams. Right kidney very much congested; impossible to peel without tearing. The line of demarcation between the cortical and the medullary substance well marked; weight of right kidney is 245 grams. The whole of the left kidney is adherent and contains many calculi, one weighing 20 grams, and one 2 grams; capsule tears on peeling. Line of demarcation between the cortical and the medullary substance not well marked. The stomach greatly distended and contains about 250 c. c. of undigested food. Appendix is congested and bound down. The urinary bladder very much congested and contains a small amount of urine. Cause of death, uræmia.

J. H. W.

EMPYEMA.

M. D.; mulatto; age, 32; nativity, North Carolina; admitted to marine ward, Hospital of St. Vincent of Paul, Norfolk, Va., February 19, 1904; died March 15, 1904.

FAMILY HISTORY.—Negative.

PERSONAL HISTORY.—Patient had gonorrhea about two years ago; chills and fever last summer; recently he has been exposed to an atmosphere laden with coal dust; now he complains of shortness of breath, especially on exertion, and slight cough with scanty expectoration; also from dull pains in chest and lumbar regions; bowels costive, urine normal, appetite good.

PHYSICAL EXAMINATION.—Patient fairly well nourished; tongue clean; pharynx shows catarrhal congestion; breathing distinctly audible and wheezing in character; heart sounds normal. Lungs: Sibilant and sonorous râles heard distinctly over entire lung surface, intensified during expiration (an expiratory dyspnea). Abdomen: Slight tenderness in right iliac region. Spleen not enlarged.

February 22.—Dyspnea much improved; a few moist râles are heard in right axillary line; cough is now accompanied by mucopurulent expectoration.

February 26.—Since admission temperature record shows a daily range from 37° C. a. m. to 39° C. p. m. Pulse 88 to 100; respirations 24 to 32; no apparent change in patient's condition; he suffers no pain.

March 3.—Fever continues high, with morning remissions and a rather profuse sweat this morning; patient is anæmic and losing flesh; examination of sputum shows no tubercle bacilli, but many staphylococci and pneumococci, and a few streptococci; leucocytes number 16,500.

March 10.—Temperature, pulse, and respiration, as above recorded; patient complained of chilliness and he perspired freely this morning, followed by nausea and vomiting.

March 12.—Patient perspired all day yesterday, and was very restless and coughed a great deal last night; he complains of thirst, but is free from pain.

Leucocyte count, 18,200. There is slightly diminished vocal fremitus in the right axillary region, but no bulging or œdema of chest wall. The percussion note is not altogether clear, but there is no distinct line of dullness; vocal resonance is slightly diminished.

March 14.—Patient complains of severe pain in right mammary and axillary regions and this afternoon suffers from expiratory dyspnea, also from muscular pains in arms and lumbar region.

March 15, a. m.—Patient rested fairly well last night. His mind is clear and he suffers no pain this morning. Temperature at 6 a. m., 36.2° C.; pulse, 144; respiration, 48. At 9.15 a. m. he asked permission to smoke, and a few minutes later he closed his eyes and died without a struggle.

Necropsy (7 hours after death).—Height 1.78 meters; rigor mortis moderate; general nourishment poor. Heart: Weight (after opening), 315 grams; myocardium, the cavities and thickness of walls are normal; all valves are competent; pericardial sac contains normal amount of clear fluid. Nares, larynx, and trachea normal. Left lung: Weight, 630 grams; the organ is slightly retracted at the apex; color normal. The bronchial glands at the bifurcation of the trachea are enlarged. Pleural cavity normal. Right lung: Weight, 780 grams; the organ is retracted at the apex and slightly compressed at lower lobe, but it crepitates when handled; the surface is smooth and mottled; dark slate color; on section a frothy mucopurulent fluid exudes; there are no consolidated areas. Plural cavity: In the axillary line, opposite the nipple, the surfaces of the pleura are covered with a thick, soft layer of lymph, between which a small quantity (about 60 c. c.) of fibrino-purulent fluid has collected; directly below this area the lung is adherent to the wall of the chest. Peritoneum normal. Stomach: The mucous membrane is pale; intestines are slightly distended with gas. Liver: Enlarged; weight, 2,450 grams; color, normal. Gall bladder and ducts normal. Pancreas: Normal; weight 75 grams. Both kidneys show moderate congestion; left, weight 180 grams; right, weight 175 grams. Bladder and ureters normal; urethra and prostate normal. Suprarenal bodies normal; left, weight 3.5 grams; right, weight 4 grams. Spleen, weight 310 grams. The organ is slightly enlarged, but otherwise apparently normal. Other organs not examined.

J. B. S.

ENTERIC FEVER.

I.

A. I.; age, 24; nativity, Finland; admitted to the United States Marine Hospital, San Francisco, Cal., March 5, 1904; died March 15, 1904.

HISTORY.—Patient has been sick seven days. He has had headache, epistaxis, diarrhœa, fever, and great weakness, with no appetite.

Examination showed small red papules scattered over abdomen and chest. Expression apathetic; tongue heavily coated; cheeks flushed; heart negative; roughened breathing over entire left lung; abdomen tympanitic, tender on pressure; spleen enlarged; stools of a yellowish-green color. Temperature, 39.9° C.; pulse, 94; respiration, 24. The temperature remained very high until March 9, cold baths being necessary frequently. On that date he had a hemorrhage from his bowels. After this the temperature range was half a degree lower, but still continued high. He had another slight hemorrhage on the 13th, and at that time became delirious and very restless. He died from exhaustion at 2.25 a. m. March 15, 1904.

Necropsy (10 hours after death).—Length of body, 5 feet 11 inches; rigor mortis marked. Brain: Weight, 1,675 grams; tissue normal; color of muscles, on section, very dark red; on removing the sternum the thymus gland is found to be present, extending downward as far as the second rib. Heart: Weight, 435 grams; a chicken-fat clot is found in the right ventricle; valves normal. Left lung: Weight, 750 grams; color, grayish red; crepitant throughout; lower lobe much darker red, especially at base and on posterior surface; bloody frothy fluid oozes out freely on section. Right lung: Weight, 735 grams; condition similar to left lung. Spleen: Weight, 355 grams; tissue, soft; section, bloody; pulp, prominent; color, dark red. Suprarenals, normal. Left kidney: Weight, 235 grams; capsule strips easily; section, bloody; cortex, swollen; yellowish-red markings; pyramids prominent, deeply congested. Right kidney: Weight, 275 grams; condition similar to left kidney. Bladder and stomach, normal. Appendix long; lumen slightly constricted in places. The mucous

membrane of the ileum for its lower 2 feet shows numerous small round and oval ulcers with smooth bases and soft edges. None of these ulcers have perforated the intestinal wall. Liver: Weight, 2,380 grams; section, pale red with yellowish areas; tissue greasy; lobules not well outlined, on the surface areas showing congested blood vessels. Gall bladder contains about a teaspoonful of bile; gall ducts patent. A culture made from the spleen shows the presence of *bacillus typhosus*.

W. G. S.

II.

J. W.; age, 33; native of Sweden; entered the marine division of the Buffalo Hospital of the Sisters of Charity on September 9 and died October 4, 1903.

HISTORY.—The patient can not speak English and can give no history.

PRESENT CONDITION.—Through an interpreter, it was with difficulty ascertained that he had been ill four days. The face is flushed, eyes suffused, and tongue red and pointed. There is cough and profuse expectoration; the abdomen is tender in the right fossa, and there is diarrhoea; the apices of the lungs are tubercular; there are moist râles, prolonged expiration, and high-pitched percussion note. In the middle and lower lobes of the right lung there is well-marked paresis; the breath sounds enfeebled; numerous shrill, sibilant râles with a few moist râles throughout this area; the percussion note anteriorly full and sonorous, while posteriorly it is higher pitched; the left lower lobe is puerile in its breathing, percussion note loud and resonant; the spleen is at the midaxillary line, and palpable at the costal border; the blood pressure is 164 mm. of mercury; the temperature is 39° C. and the pulse 90. The course of the typhoid fever ran smoothly; rose spots appeared on the seventh day, and the Widal reaction was positive on the ninth day, and the temperature became normal on the fourteenth day of illness. On the next day all symptoms became worse, the left lung became paretic, and the paretic portions of the right rapidly developed oedema; dyspnoea was extreme. From the fifteenth to the twenty-first days this paretic oedema continued, and death from failure of the right heart was imminent, but thereafter it improved with amelioration of all symptoms until the morning of the twenty-ninth day, when a copious hemorrhage from the left apex occurred, and he died.

NECROPSY (14 hours after death).—Body of an adult male; moderately emaciated; rigor mortis well marked; hypostasis of the dependent portions of the trunk; two slight echymoses on the chest wall at site of saline injections; the pupils widely dilated. The abdomen opened by median incision; the peritoneum is normal; the mesentery of the small intestine is engorged, and its glands enlarged; incision of the lower portion of the ileum showed several recently healed ulcerations in the Peyer's glands; the spleen somewhat enlarged; the kidneys congested; the liver normal macroscopically; the pericardium normal; the right heart distended with semiclotting blood, the left contracted, the heart muscle pale and fatty. The right pleura is adherent at the apex and posteriorly over the middle lobe; the left pleura is generally adherent over the upper lobe. Both apices are in caseous degeneration; the right lower and middle lobes are oedematous, yet sections float in water bath, and pressure shows the presence of considerable quantities of air in the lung spaces; the lower left lobe is congested. In the lower border of the left upper lobe there is a small cavity, 2 cm. in diameter, filled with recent blood clot, the seat of the fatal hemorrhage. From the tubercular foci the *bacillus tuberculosis* was readily stained, and in the paretic areas on the right side rounded rods in great numbers staining as the *bacillus* of Eberth were found.

E. W.

III.

J. W.; age, 20; nativity, Norway; admitted to the United States Marine Hospital, Boston, Mass., on February 28, 1904, and died on February 29, 1904.

HISTORY.—Family and previous history were negative. Patient was brought to the hospital in the ambulance; complained of occipital headache, tenderness over the abdomen, diarrhoea, no appetite, and fever. Temperature was 39.2° C., spleen enlarged, and the patient was very weak.

TREATMENT.—Patient was put to bed and cold bath given at once. This was repeated every hour; ten grains of quinine and one Dover's powder were also given.

February 29, 1904.—Patient delirious; temperature dropped suddenly 2° C.; was very weak, and stimulants were used every hour. Died at 1.38 this morning.

NECROPSY (12 hours after death).—Body was that of a well-developed but much emaciated young man; rigor mortis well marked; post-mortem sugillations well marked.

Thorax: Left pleura was adherent and showed some inflammation, and was slightly emphysematous. Right pleura was normal. Pleural cavity contained 75 c. c. of serous fluid. Right lung showed pneumonic changes at the apex and middle lobe; was extremely oedematous, and cut section sank in water; weight, 990 grams. Left lung showed hypostatic pneumonia and about the same changes as in the right lung; weight, 590 grams. Pericardium contained 65 c. c. of straw-colored fluid. Heart was normal; weight, 330 grams. Abdomen: Left kidney showed slight congestion and capsule stripped easily; weight, 250 grams. There was extensive hemorrhage into the left perinephritic tissue, and into the left psoas muscle. Right kidney was slightly congested, and capsule stripped easily; weight, 220 grams. Liver was normal; weight, 2,100 grams. Gall bladder empty. Spleen was highly congested and considerably softer than normal; weight, 700 grams. Stomach was normal. Intestines showed enlargement of solitary follicles and ulceration of Peyer's patches in the ileum and ascending colon; mesenteric glands were considerably enlarged. Pancreas was normal; weight, 120 grams. Bladder was empty and walls seemed considerably thinner than normal. Brain showed a slight softening of cerebellum; weight, 1,220 grams.

R. M. W.
W. C. R.
J. D. F.

IV.

N. N.; age, 24; nativity, Norway; admitted to the marine wards of the German Hospital, Philadelphia, Pa., January 30, and died February 10, 1904.

CLINICAL DIAGNOSIS.—Typhoid fever, right pleuro-pneumonia.

ANATOMICAL DIAGNOSIS.—Typhoid fever; acute splenic tumor; catarrhal pneumonia of right base; acute parenchymatous nephritis.

NECROPSY (24 hours after death).—Body that of a well-developed male; weight, 180 pounds; height, 5 feet 10 inches; post-mortem lividity present over back and buttock. The left pupil is slightly larger; both are dilated. There were fibrino-plastic adhesions anteriorly and at the apex between the left lung and pleura. The left pleural cavity contained 200 c. c. serous fluid. Some hypostatic congestion of left lower lobe. Fibrinous adhesions present posteriorly between the right lung and pleura. The right pleural cavity contained 300 c. c. serous fluid. The right lung weighed 500 grams; marked congestion of lower part of lower lobe; no crepitation. Heart and pericardium were normal. Abdomen: Transverse colon horseshoe-shaped; fibrous adhesions around gall bladder; gall bladder and liver otherwise normal. Spleen: Weight, 655 grams; length, 17 cm.; width, 12 cm.; thickness, 8 cm.; pulp increased, consistency diminished, capsule tense, follicles not prominent. Right kidney weighed 275 grams; capsule stripped easily; surface smooth and yellowish red; section surface dull and opaque; color, reddish yellow. Left kidney: Weight, 260 grams; capsule stripped easily; surface smooth and red; section surface dull and opaque; color, red; the mesentery was fatty and shows enlarged and softened lymph glands. The Peyer's patches in ileum were swollen, necrotic, and ulcerated. Brain: Dura, smooth and glistening; arachnoid moist and oedematous over convexity; consistency, normal; cerebellum and cord normal.

F. I.

V.

C. R.; age, 29; nativity, Finland; admitted to the United States Marine Hospital, San Francisco, Cal., October 1, 1903; died October 3, 1903.

HISTORY.—The patient stated he was taken sick eight days ago; his illness began with a chill and two days later he had pain in his abdomen. During the last three days he had vomited often.

EXAMINATION.—Patient very weak; covered with profuse sweat; temperature 37.9° C.; pulse, 96, hardly perceptible at wrist; respirations, 24; general appearance good; very little emaciation; abdomen tympanitic and tender; lungs normal; heart sounds very weak, scarcely audible; spleen and liver dull.

ness increased; Widal reaction positive; urine—specific gravity, 1.028; acid reaction, albumen abundant; bowels constipated. At 8 p. m. the same day his abdomen was greatly swollen, there was tenderness on pressure over its whole surface; the patient was apathetic; tongue dry, small, having glazed appearance; face drawn; pulse weak, compressible. He complained very little of pain. The next afternoon he became worse, vomited first mucus, then bile, and finally fecal matter. He had profuse sweats and the pain had to be controlled by morphia. He died from exhaustion at 2.20 a. m. October 3, 1903.

NECROPSY (9 hours after death).—Body fairly well nourished; height about 6 feet; dark-brown fluid escapes from the mouth on raising the head. Brain: Weight, 1,520 grams; tissue apparently normal. When the abdomen is opened a foul-smelling gas escapes. The entire surface of the peritoneum, both viscera and parietal, is covered with a thick layer of yellowish lymph, and the cavity contains 1,000 c. c. of yellowish, foul-smelling liquid. The lymph has bound the viscera into one solid mass, so that it is difficult to separate one structure from another. The omentum is of a reddish-gray color, lying on the intestines, to which it is intimately adherent. The intestines are distended with gas and are of a dark reddish-gray color. The pericardium is filled with a straw-colored fluid; the right ventricle contains a small chicken-fat clot extending into the pulmonary artery. The thickness of the wall of the right ventricle is $\frac{3}{4}$ cm., of the left ventricle $1\frac{1}{2}$ cm. The valves of the heart are normal. The heart muscle is of a bright red color. Left lung: Weight, 650 grams; crepitant; reddish-gray color; tissue apparently normal. Right lung: Bound down by adhesions at its upper lobe; weight, 750 grams; tissue same as other lung. Spleen: Weight, 160 grams; tissue bright red color; on section, consistency soft; pulp firm, bloody, and prominent. Left kidney: 250 grams; measurement, 15 by 9 by 3 cm. There is a cyst size of a pea filled with yellowish-red fluid on its anterior surface; the capsule strips readily; on section the cortex shows marked yellowish striations; the pyramids are of deep red color. Right kidney: Weight, 250 grams; condition same as opposite kidney. Stomach: Mucous membrane is covered with a dark-brown sticky substance; on washing this off the membrane shows many small hemorrhages; the duodenum is in the same condition as the stomach, but the hemorrhages are more marked; in the wall of the ileum are numerous ulcers, two of which have perforated the intestines; the perforations are about $\frac{1}{4}$ cm. in diameter, the mucous membrane of the ileum and large intestine is congested and hemorrhagic; the appendix is bound down by the adhesions similar to the adhesions which bind the other organs together; it is slightly swollen, but its lumen is patent. The mesenteric glands are enlarged. Liver: Weight, 2,670 grams; cuts with slightly increased resistance; very pale; red on section.

W. G. S.

VI.

B. P.; age, 38; nativity, Michigan; was admitted to the United States Marine Hospital, port of St. Louis, Mo., February 28, and died February 29, 1904.

HISTORY.—Patient was brought to the hospital in a very feeble condition, and respiration were 37.2° C., 90, and 21, respectively. He was given stimulants. He could give no history of his case other than he had been ill for some time, and had finally concluded to enter this hospital.

NECROPSY (4 hours after death).—Body that of a young, adult, white male, muscular and fairly well nourished; skin somewhat jaundiced; rigor mortis well pronounced; pupils evenly dilated; abdomen slightly distended, and, on section, discharging a large quantity of purulent serum mixed with fecal matter and of a markedly fecal odor; lungs collapsed; no adhesions to chest wall; pleura dry; pericardial sac contains 50 c. c. of clear fluid. Heart: Weight, 270 grams; right auricle contains ante-mortem clots; left, fluid blood; valves normal; visceral pericardium somewhat thickened. Left ventricle contracted; right, dilated. Lungs: Left, weight, 260 grams; crepitates in all parts; on section showing little blood; right, weight, 320 grams; some marginal emphysema. Bronchial mucosa slightly congested. Intestines matted together by recent fibrinous material, particularly in lower abdominal and pelvic cavities. Mesenteric glands considerably enlarged, rather soft. Ileum site of perforation 14 cm. above ileo-caecal valve; and two other ulcerations, one 20 cm. above that valve and one at its margin. Ulcerations elliptical in shape, long axis transverse to gut. Spleen very much enlarged; firm; pulp does not scrape off readily on knife; like currant jelly; capsule strips readily; weight, 320 grams. Gall duct patulous. Stomach mucosa pale, otherwise normal. Kidneys: Capsules strip

readily; cortex somewhat mottled and thickened, showing toxic parenchymatous nephritis with fatty degeneration somewhat advanced in glomeruli; right somewhat paler than left; weight, right, 105 grams; left, 180 grams. Liver: Weight, 1,820 grams; right lobe superior surface shows fibrinous patches; on section rather pale, with uniform yellow mottling throughout, apparently indicating parenchymatous hepatitis. Gall bladder contains 100 c. c. of very dark, almost inspissated bile. Pancreas normal. The findings may be considered as enteric fever; ulceration of intestines, perforating, with inflammation, acute; inflammation of liver chronic, with chronic Bright's disease.

J. M. G.

VII.

Seaman J. B.; age, 19; nativity, Canada; admitted to the marine wards of the German Hospital, Philadelphia, Pa., February 24, and died March 5, 1904.

CLINICAL DIAGNOSIS.—Enteric fever.

ANATOMICAL DIAGNOSIS.—Typhoid ulceration of ileum, acute splenic tumor, focal necrosis of liver, congestion of kidneys.

NECROPSY (48 hours after death).—Body is that of a male, weight about 140 pounds, of good musculature. Post-mortem lividity over buttocks and back; fibrous adhesions between left lung and pleura laterally and at the apex. Left lung: Weight, 350 grams; moderate hypostatic congestion of lower lobe. Right lung: No adhesions; weight, 400 grams; hypostatic congestion present in lower lobe. Heart normal. Liver: Weight, 1,820 grams; of soft consistency; on section moist; smooth and opaque in spots; several small yellowish areas of focal necrosis. Spleen: Weight, 320 grams; soft consistency; capsule tense; section surface dark red; soft splenic pulp greatly increased. Both kidneys normal macroscopically. The intestines show different phases of typhoid pathology, the Peyer's patches of upper portion of ileum are swollen and partially necrotic, in lower portion they are deeply ulcerated. There was no blood in the intestines. The mesenteric glands are enlarged, soft, dark red in color, the greatest enlargement confined to those glands nearest the seat of greatest ulceration. Brain: Vessels of base, convexity, and choroid plexus injected. Spinal cord was normal.

F. I.

INFLAMMATION OF CONNECTIVE TISSUE, NECK.

(*Ludwig's angina.*)

O. O.; age, 29; nativity, Norway; was admitted to the United States Marine Hospital, Boston, Mass., December 15, 1903, and died December 20, 1903, at 2.45 a. m.

HISTORY.—Family and previous history negative.

PRESENT HISTORY.—On the 13th instant the patient went to bed feeling perfectly well. The next morning he felt sick and weak and unable to work. He noticed a swelling above the "Adam's apple" which gradually increased in size and finally occupied the entire left side of the face.

EXAMINATION.—There was a small red point beneath the chin over the point of greatest swelling, which looks as though an attempt had been made to puncture the skin at this point. There was very limited fluctuation, and the swelling thick and brawny. The patient's skin was hot and dry, and he says he is "freezing." The heart and lungs were normal and the pulse full and rapid.

December 16, 1903.—Under ether anaesthesia the opening in the neck was enlarged and the wound packed with sterile gauze. The patient was put to bed on milk diet; temperature very high and general condition very serious.

December 17, 1903.—Patient was delirious, with temperature of 40.2° C. An injection of antistreptococcic serum was given and in the evening a large dose of quinine.

December 18, 1903.—Temperature 40° C. Another injection of antistreptococcic serum given. In the evening the patient was delirious; one-half grain of morphine given hypodermatically.

December 19, 1903.—Patient was delirious and required restraint apparatus to be kept in bed; pulse, 140; temperature, 40.6° C.

December 20, 1903.—Heart very weak and required stimulation. Patient failed rapidly and died at 2.45 a. m.

NECROPSY (7 hours after death).—Body was that of a well-developed man; post-mortem rigidity well marked; lividity fairly well marked. There was a

wound 1½ inches in length beneath the chin. There were numerous discolorations on the chest. On cutting through the skin of the chest hemorrhages into the muscles were seen and serum escaped. Thorax: Position of thoracic organs was normal. Pleura was nonadherent. Pleural cavity contained 200 c. c. of serous fluid. Lungs: Left lung showed congestion at the base, weight 400 grams. Right lung showed congestion at the apex, weight 470 grams. Heart weighed 350 grams; right heart contained dark unclotted blood and chicken-fat clot. The left heart was empty and contracted. Liver was congested, weight 2,200 grams. Both kidneys were normal and weighed 220 grams each. Spleen was engorged, weight 325 grams. Pancreas was normal, weight 150 grams. Brain was engorged and on its removal serum escaped freely.

R. M. W.
J. D. L.
W. C. R.

INTESTINAL OBSTRUCTION.

Right oblique inguinal hernia strangulated.

C. J. C.; age, 37; nativity, Sweden; admitted to the United States Marine Hospital, San Francisco, Cal., September 14, 1903; died September 18, 1903.

HISTORY.—The patient has been drinking heavily and trembles violently when he tries to talk or move. He states he has been on the present spree about three weeks, but gives a very indefinite account of himself. He says last night he slipped and while trying to recover himself he felt a pain in his right inguinal region and later he noticed a swelling at this place. He was taken to the receiving hospital and this morning at 10 a. m. was given chloroform. The authorities at the hospital reported that when the man was admitted there he had a hernia which was reduced when he was under chloroform.

PHYSICAL EXAMINATION.—The patient's right inguinal region is tightly bandaged; on removing the bandage a small fusiform swelling is found to be present in the inguinal canal. There is great tenderness on pressure over and around this tumor. Heart and lungs are apparently normal. He has had no vomiting. The abdomen is flat, no tympanites being present. Temperature 37.6, pulse 72, respiration 28.

An ice bag was placed over the swelling, an enema given, and his bowels moved freely. Next day the swelling had somewhat subsided and the tenderness was less marked. The morning temperature was 37.6° C.; pulse, 84; respiration, 25. The evening temperature was 39° C.; pulse, 98; respiration, 22. The patient was still very nervous. He had no tympanites or vomiting. On the 16th his morning temperature was 38.5° C.; pulse, 90; respiration, 24; evening temperature, 38.6°; pulse, 84; respiration, 24. Tenderness over the inguinal region was less. The morning of the 17th the swelling had increased and there was some oedema of the scrotum on the right side. The patient stated that this additional swelling had occurred after a fit of coughing. An ice bag has been kept continually applied to the inguinal region. Morning temperature, 38.8° C.; pulse, 92; respiration, 23; evening temperature, 38.8°; pulse, 93; respiration, 24. His bowels moved freely after an enema and he states that he passed flatus without difficulty; the abdomen is flat and he has had no vomiting. The patient did well through the day, but during the night between midnight and daybreak he became suddenly worse. The next morning the oedema of the tissue had greatly increased; it extended over the scrotum, penis, and the lower abdomen. There was much tenderness on pressure and the patient complained of severe pain. The abdomen was still flat, there had been no vomiting, and his bowels moved twice, after an enema. Temperature, 37.5° C.; pulse, 112; respiration, 31. The patient was anesthetized with ether and multiple incisions were made into the oedematous tissues; a large quantity of yellowish fluid escaped; the urethra was opened in the perineum and a soft catheter was introduced into the bladder. Some little difficulty was experienced in finding the deep urethra on account of the swelling of the tissues; an incision was then made into the tissues over the right testicle and the tunica-vaginalis opened; the incision was prolonged into the inguinal region and a sac found leading from the testicle into the abdominal cavity. An incision was about to be made into this sac when the patient collapsed. He had been taking the anæsthetic very well; there had been some cyanosis, but it was not marked. His breathing had been regular and his pulse good. For the previous five minutes he had been given no ether, as the nurse having been ordered to prepare

the patient's bed, the anesthetist thought the operation was nearly finished and had removed the ether cone from the patient's face. The patient's respirations became shallow and then stopped altogether; there was deep cyanosis. His head was immediately lowered, artificial respiration was commenced, and he was given oxygen, nitroglycerin, and strychnia, but he did not revive. The artificial respiration and the oxygen was continued for forty minutes; 250 c. c. of ether was used during the anesthesia.

NECROPSY (4 hours after death).—Body of large, well-nourished man, about 6 feet tall. Anchor on back of right hand. Operation, wound in perineum 2 inches in length, also one in the right groin and scrotum 5 inches long, exposing testicle. The external surface of the lower abdomen, penis, and scrotum exhibit a uniform yellowish discoloration. On separating the lips of the wound in the groin a tumor is exposed extending from the testicle to the external abdominal ring, where it is constricted. The inguinal canal is incised and the abdomen opened. A sac extends from the peritoneum through the inguinal canal and is intimately adherent to the testicle. On opening this sac black fluid escapes and the sac is found to be gangrenous in spots and shows hemorrhagic infiltration. It contains bowel of black color and gangrenous odor. On following this piece of bowel into the abdomen it is found to be a diverticulum from the cæcum. It is as thick as a thumb, 4 cm. long and 3 cm. wide, and is attached to the cæcum at its lower posterior portion, 3 cm. from the root of the appendix. This diverticulum is constricted at its connection with the cæcum. The appendix is normal and the cæcum is in normal condition, only a few hemorrhagic spots occurring on its surface near the diverticulum. There are no other evidences of an inflammation of any part of the peritoneum with the exception of a few hemorrhagic spots on the coat of the right external iliac vein. A lymphatic gland found in the inguinal canal is of a black color, and on section shows cortical hemorrhages. The walls of the abdomen and the tissues over the right femoral region are infiltrated with gelatinous exudate. Brain: Weight, 1,400 grams; tissue congested. Heart: Weight, 415 grams; a few small clots are present in the right ventricle; thickness of its wall, 0.5 cm. The left ventricle contains no clots; its wall is 2 cm. thick; the edges of the mitral valves are roughened. Lungs: There are a few adhesions at the apex of the left lung and at the posterior surface of the base of the right lung. The right lung shows some congestion at the base, but the tissue of both lungs is otherwise apparently normal. Spleen: Color on section very dark red; tissue soft and shows well-marked hemorrhagic areas. Right kidney: Capsule strips easily; weight, 165 grams; blood drips from the kidney on section; the cortical portion is 1 cm. thick, and shows marked hemorrhagic infiltration. Left kidney: Weight, 175 grams; the tissue is in the same condition as the right kidney. Bladder contracted. Liver: Weight, 2,170 grams; on section tissue has the so-called "nutmeg" appearance. Other abdominal organs are apparently in normal condition. Cultures were taken from the spleen and from the lymphatic glands in the groin. A bacillus, resembling the colon bacillus, was found to be present.

W. G. S.

Volvulus.

M. S.; age, 56; nativity, Ohio; occupation, steward; admitted to the United States Marine Hospital, Cleveland, Ohio, February 22, 1904; died February 25, 1904. When admitted, patient complained of obstinate constipation of four days' standing, with severe pain referred to abdomen.

PHYSICAL EXAMINATION.—The abdomen was found to be widely distended and extremely tender all over. There was fecal vomiting. Attempts to move the bowels being unsuccessful, a laparotomy was done, at 10 p. m., February 22, twelve hours after admission to the hospital, and the source of obstruction was found to be a volvulus of the small intestines, located 1 meter distant from the caput coli and involving about one-half meter of gut. This was relieved, and as the gut appeared viable it was returned to the abdomen and the wound closed. The condition of the patient improved somewhat after the operation. Flatus was passed per rectum and all vomiting ceased. No movement of the bowel was obtained, and the patient gradually failed until his death, at 4.30 p. m., on the 25th.

NECROPSY (15 hours after death).—The examination was restricted to the abdominal contents. There was no peritonitis. The small intestine was markedly distended to within 1 meter of the caput coli. The lower one-half meter of the

distended small intestine presented evidence of partial strangulation; portions of the gut were dark in color. These areas were scattered about over the portion of the gut involved, and varied in size from 2 cm. to 3 cm. in diameter. Recent adhesions lightly bound together the coils of intestine near the site of obstruction. Upon opening the gut there was no evidence of ulceration. The gut was filled with gas and feces. The rest of the small intestine and the large intestine were empty and contracted. The other abdominal contents appeared normal.

J. W. W.

H. S. M.

New growth of pancreas.

S. A.; age, 50; nativity, Sweden; admitted to the marine ward of the Los Angeles Infirmary, Los Angeles, Cal., April 12, 1903; died July 3, 1903.

HISTORY.—Patient was operated upon at this hospital last October for appendicitis, and later a right-sided psoas abscess developed, pointed in thigh, was opened, drained, and healed. Left hospital apparently all right. During the winter a pain of indefinite character developed in abdomen, which seemed to radiate down into left iliac fossa. Examination on entrance revealed nothing in these regions. Had been constipated for a long time. Bowels opened with cathartics, and after fourteen days in hospital an enlargement appeared in left iliac fossa. Operated in two stages and found a large psoas abscess, and a pint of greenish-yellow pus drained off. Patient got much better, but still constipated and anemic, and received treatment for both. Restless at times, and still complained of the obscure pain in the abdomen. June 26, had great pain in abdomen and commenced vomiting up stercoraceous material. Could keep nothing on his stomach. Diagnosis: Intestinal obstruction, and operated June 30, 1903. Found bowels distended and a constricting band of adhesions around ilium. Stricture was incomplete, however. Exploration of abdominal cavity revealed hard, nodular mass at head of pancreas, involving gall ducts, mesenteric glands, pancreas, and entirely surrounding the colon. Patient very weak; operation hurried. Gut was punctured and gas and fecal contents drained out and sutured with Czerny-Lembert sutures, and all adhesions broken up. Patient kept alive next three days by salt solution, strichnia, stimulating enematas; rallied fairly well; bowels moved, vomiting ceased, but died July 3, 1903, at 7 a. m.

NECROPSY (3 hours after death).—Rigor mortis setting in, but body still warm. Body of a rather small man, greatly emaciated. Skin of a yellowish tint. Nothing abnormal externally, save scar of appendicitis operation of last October and the open wounds from his recent psoas abscess on the left side and the wound in linea alba, in process of healing from recent exploratory operation. Hypostatic congestion of lungs posteriorly and a little exudate, showing pneumonic process. Coal pigment, but no evidences of tuberculosis. Heart is very much contracted and right ventricle quite thin. Usual clots in heart. Valves competent. Pericardial fluid increased about double. Diameter of the thoracic aorta greatly increased and a slight tendency to sacculatation. Other vessels and thoracic duct normal. Omentum very thin; no fat. Plastic adhesions of intestines everywhere. Some dark areas of congested capillaries on surfaces. Operative wound of intestine healed beautifully. Appendix operation wound showed beautiful results and adhered to abdominal scar. Intestine patulous, but not greatly inflated. Liver is very small and shows nothing wrong save its size and the large size of the full gall bladder. Common gall duct encroached upon by an enlarged, hard, lymph gland pressing upon it, thus narrowing its lumen. Spleen is normal, save its small size. Kidneys showed healed scars externally and a proliferation of white scar tissue; upon section shows normal structure. Stomach shows no involvement at all in the cancerous process. At head of pancreas one large tumor mass, less than size of patient's fist; whole organ hard and cirrhotic. Mesenteric glands near by involved and were also hard and cirrhotic. Mesentery shows no acute inflammatory process. The colon was encroached upon, surrounded, and embedded in the mass, and here a stricture resulted. The mass was of a whitish connective tissue color. No stones found in pancreas. Bladder normal. Ureters normal. No source for the psoas abscess could be found.

M. H. R.

J. O. C.

MALARIAL FEVER, REMITTENT.

Acute endocarditis, collapse of right lung.

H. G.; age, 30; nativity, Germany; admitted to United States Marine Hospital, New Orleans, La., January 28, 1904; died February 6, 1904.

HISTORY.—Previous illness, typhoid fever in 1898; none other of any moment; denies venereal disease. Two days prior to admission had a chill, followed by fever and sweat. Since then has had malaise, headache, and fever. On admission has a cough and slight coryza. Some discomfort in lower part of right chest, but taking a deep breath does not cause pain. Expectoration is scant. Sputum white, frothy; is not now, and has not been, blood tinged. Patient is a strong, robust-looking man. Facies heavy and stupid. Skin and mucous membranes pale. Tongue moist, flabby. Teeth indented and heavily coated, white. Temperature 39.8° C. Pulse 103, of moderate tension and compressible.

PHYSICAL EXAMINATION.—Heart apparently normal. A few coarse mucous râles heard over lower lobes of both lungs, more numerous over right; otherwise examination was negative. The day after admission patient's condition was improved. Cough was not troublesome, headache was relieved, and he had scarcely any pain in chest. A saline had been administered in the early morning, and bowels moved freely several times during the day. At 6 p. m. temperature was 38° C.; pulse, 84. On the afternoon of January 30 temperature began to rise, and at 6 p. m. was 40.2° C.; pulse, 105; skin moist; face pale; respirations 30 per minute. At 9 a. m. on January 31 patient felt quite comfortable. Temperature, 39° C.; pulse, 90; respiration, 28. Physical examination of heart was negative; fine and coarse moist râles heard over bases of both lungs; more numerous over right. Percussion note clear on both sides. On examining blood a few plasmodia of æstivo-autumnal type were found. Quinine sulphate, 0.6 gram, was given every four hours. On February 2 a loud blowing systolic murmur could be heard over apex of heart. Respiration was rather shallow, and averaged about 30 per minute; voice was husky. The coarse mucous râles over lower lobe of right lung were increased, and the respiratory murmur over the upper part of the lung was roughened. Stimulants were increased and quinine continued. Temperature began to fall on February 2, and with slight evening rises continued to fall until the morning of February 4, when it was normal. Patient's general condition seemed improved. Pulse at 9 a. m. was 74 and of good tension. Cough was not troublesome, expectoration free, and sputum was mucopurulent in character. Respiration deeper and free of pain—about 30 per minute. In the afternoon of February 4 temperature rose rather suddenly, and at 6 p. m. was 38.8° C. The fever was not preceded by a chill, but was followed by a profuse sweat. February 5 temperature was normal, patient's mind was clear, and he complained of no pain. Improvement was indicated by all symptoms except the rapid respiration, which continued about 30 per minute. At 9 a. m. February 6 respiration was 35 per minute, wheezy and rather shallow. Patient was perspiring freely and face was pale. Pulse was 82 and of fair tension. Stimulation was increased and quinine reduced to 0.3 gram three times a day. At 11 a. m. patient's respiration was easier and deeper. His strength seemed abundant, and he was able to sit up in bed or stand without assistance. At 2 p. m. respiration suddenly became gasping, pulse weak and thready, face blanched. Hypodermic injections of strychnine, nitroglycerine, and ether were given and artificial respiration used, but the patient sank rapidly and died at 2.40 p. m.

NECROPSY (18 hours after death).—Body well nourished; rigor mortis marked; post-mortem lividity of dependent parts. Mucosanguineous discharge from mouth and nostrils. Right pupil slightly contracted, probably due to an old iritis with adhesions. Calvarium not removed. Right pleural cavity contained 800 c. c. of clear fluid. Right lung is collapsed and flattened against inner wall of cavity, covered posteriorly with plastic exudate. Weight, 650 grams. On section lung is found to be deeply congested. Is not crepitant in any part. Left pleura and lung normal. Weight of lung 590 grams. Pericardium contains 100 c. c. of clear fluid. Fatty panniculus marked. Heart weighed 350 grams; contained ante-mortem clots. Mitral valve was incompetent and the edges of its anterior segment were thickened, crumpled, and lined with vegetations. Tricuspid valve also incompetent and edges of two of its segments lined with fresh vegetations. Aortic and pulmonary valves were nor-

mal and competent. Liver was normal in appearance; weight 1,900 grams. Gall bladder contained 50 c. c. bile. Spleen weighed 220 grams; capsule adherent; pulp soft. Right kidney weighed 220 grams; left, 250 grams. Both were slightly congested, otherwise normal. All other contents of abdominal cavity were apparently normal.

L. L. L.
C. P. W.

NEW GROWTH, MALIGNANT.

Carcinoma of palate and fauces.

J. A.; white male; age, 45; born in Illinois; was admitted to the United States Marine Hospital, Chicago, Ill., on December 6, 1902; died November 25, 1903.

FAMILY HISTORY.—Good.

PERSONAL HISTORY.—Had measles and malaria; had gonorrhœa three times; no history of syphilis.

PRESENT CONDITION.—About March, 1902, patient began to be troubled by dryness of throat and a hacking cough. This was first diagnosed as bronchitis. About August 1 patient noted a small growth in the posterior wall of pharynx, which occasionally bled. From August 1 the growth gradually enlarged, but seldom bled. Patient complained of a constant dull pain in throat, radiating to right ear. There was some pain on deglutition, and patient said that he could not breathe with ease. The appetite was poor.

PHYSICAL EXAMINATION.—Inspection showed growth on posterior wall of pharynx and right tonsil; right side of face and right shoulder showed redness of skin, caused by X-ray burns.

January 26, 1903.—Patient has suffered more or less since date of admission with severe neuralgic pains in the right side of face, radiating over the scalp and down the right shoulder. On examination it was seen that the uvula had become actively involved, and its anterior aspect showed an eroded surface.

February 9, 1903.—Patient continued to have pain, which was greatly exacerbated at times, requiring the use of analgesics continually to give comfort. On inspection it was seen that the anterior pillar of the right fauces, right tonsil, and right half of soft palate were almost destroyed, while the right half of uvula was partly destroyed and remaining portion drawn to the other side. The buccal mucous membrane was already involved.

February 18, 1903.—On this date the uvula was found obliterated, and the growth of the neoplasm seemed to be infiltrating the surrounding tissues. The tongue also was involved, the site of the neoplastic formation being on the right posterior portion.

July 6, 1903.—Patient's condition was growing worse. The growth prevented opening of the mouth, necessitating the use of liquid food and interfering greatly with deglutition and phonation. The submaxillary lymphatics were noted somewhat enlarged and greatly indurated. Cachexia was becoming marked. Severe pains radiated from growth up and down the right side of head and face, and required the use of hypodermic injections of morphine sulphate 0.015 gram every eight hours.

July 10, 1903.—Patient had quite a severe hemorrhage. The loss of blood was estimated at about 750 c. c.

November 6, 1903.—Patient had progressed as usual to date. Emaciation extreme and cachexia marked. Large doses of morphine were required to allay pain.

November 21, 1903.—Patient had become very weak and was delirious at times; pulse was getting weaker. He was taking no food by mouth, necessitating the use of nutritive enemata.

November 23, 1903.—Condition was grave, patient being in a comatose state; temperature, 36.3°; pulse, 138, and thready; respirations, 20.

November 25, 1903.—Despite active stimulation the patient grew gradually weaker, respirations shallower, and at 3.45 p. m. heart's action ceased. The nature, extent, and location of the growth precluded any surgical interference. The treatment was symptomatic. The patient was very weak and cachectic and the growth surrounded the right carotid and submaxillary arteries besides other important structures. It was feared that the arterial walls were so diseased that a fatal hemorrhage might occur from the manipulation incident to an operation for the removal of the growth. Coley's toxins were tried with no apparent results.

NECROPSY (24 hours after death).—Body that of a poorly nourished white male; age, 45; post-mortem rigidity not well marked; post-mortem lividity marked; subcutaneous tissues poorly developed. Thorax: Pericardium contained about 10 c. c. straw-colored fluid. Heart weighed 250 grams; contained a few ante-mortem clots; valves to all appearances were normal. Lungs were bound down by adhesions. Bronchial glands were enlarged and cheesy. Right lung weighed 570 grams. Apex scarred on surface. Left lung weighed 580 grams. It was congested at base. Abdomen: Liver adherent to diaphragm; weighed 1,350 grams; on section appeared normal. Intestines matted together by adhesions. Right kidney weighed 140 grams; was bound down by adhesions and capsule stripped with difficulty. Left kidney weighed 130 grams; also adherent; small cyst was present on posterior surface; capsule adherent. Both kidneys appeared normal on section. Spleen weighed 100 grams, and to all appearances was normal. Bladder was partially distended with urine. In the right submaxillary region at the angle of the ramus of the inferior maxillary bone was a dark necrotic mass of tissue, which on incising set free a quantity of very offensive material composed of degenerated cells, disintegrated blood, and purulent material. The pathological processes had involved almost the entire right wall of the pharynx, and there was left a free communication between the buccal cavity and the exterior. The patient's death was probably due to septic intoxication, the result of absorption of the septic material into the general systemic circulation. The growth was very malignant in character, as is shown by the clinical course of the disease.

F. A. A.

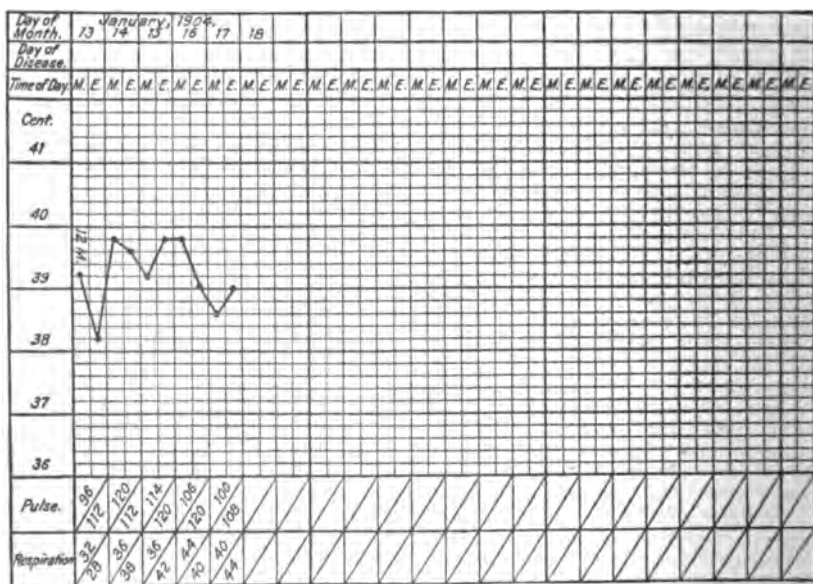
C. E. B.

PNEUMONIA.

Lobar; absence of right kidney.

I

J. M. ; age, 47; nativity, Massachusetts; was admitted to the United States Marine Hospital, St. Louis, Mo., January 13, and died January 17, 1904.



HISTORY.—Patient had been ill for several days and on admission was exhausted from pain, sleepless nights, and the distress of his disease. On

admission respiratory sound was absent over right lung and faint over left. Temperature, 39.2° C.; pulse 96, wiry; respiration 32, superficial. Dyspnoea, lividity of the prolabia, and prune-julce expectoration, with constant restlessness and inability to lie down completed the picture. Energetic treatment of quinine, strychnine, and alcohol were given without effect and patient died January 17, 1904, at 7.40 p. m.

NECROPSY (20 hours after death).—Body that of a very muscular, well-nourished, white adult male. Rigor mortis and lividity of dependent parts well marked. Abdomen and abdominal organs loaded with fat. Lungs closely adherent throughout, and impossible of removal, except in fragments. Right, hepaticized; left, nodular, congested. Heart full of dark-red clots; weight, 420 grams; hypertrophied throughout; valves appeared to be competent. Arteries thickened and parchment like. Liver: Weight, 2,600 grams; very friable, hyperæmic. Kidney: Left, swollen, enlarged, pale; weight, 330 grams; capsule strips readily; loaded with fat, and pelvis almost obliterated with bright, yellow fat. No trace could be found of right kidney, nor of right ureter, nor was there trace of a nephrectomy. Frænum præputii shows an old scar.

H. C. W.
J. M. G.

II.

J. M.; age, 57; nativity, Maryland; admitted to the United States Marine Hospital, Baltimore, Md., December 7, 1903; died December 11, 1903.

HISTORY.—He ascribes his present condition to a fresh "cold" engrafted upon a chronic cough of three months' standing. One week ago his cough became worse, he was weak and feverish, but never had a chill or pain in the chest. On admission to the hospital he complains of a severe cough with very scanty, tenacious, rusty, sputum; has no pain, but is suffering greatly with dyspnoea; temperature, 39°; pulse, 132, and respiration, 48 per minute.

His physical signs on admission are as follows: Dullness on percussion over right lower half of the chest, with vocal resonance and fremitus, bronchial breathing, and crepitant râles on inspiration in this position. Urine is highly albuminous, with many pale, granular casts, red and white corpuscles. Death was sudden and unexpected eighty-one hours after admission.

NECROPSY (16 hours after death).—Post-mortem rigidity is extremely well marked. The left lung is not diseased beyond some swelling and injection of the mucous membrane of the large bronchial tubes. The right pleura contains 100 c. c. of clear serum. Laterally the upper lobe of the right lung is tightly adherent to the chest wall. The organ is uniformly consolidated. The surface of section of the upper two lobes is grayish red; of the lower lobe, deep red in color. There is an area in the apex, about 4 cm. across, which is softer and more deeply congested than the surrounding tissue. It is traversed by several fibrous bands and is probably a subacute tubercular focus. Many of the medium-sized and smaller bronchioles are filled with fibrino-purulent material. The organ is quite friable, the torn surfaces showing small fibrinous plugs, which project from the finer bronchial tubules.

The heart is of normal size; its valves are competent and its muscle yellowish red, though not fat streaked. The muscle is probably degenerated. Both ventricular cavities are partially filled with mixed clots, which are entangled in the meshes of the mitral and tricuspid leaflets and extend through the aortic and semilunar valve openings into the aorta and pulmonary artery for a distance of 7 cm. There is no pulmonary embolus, at least in the larger branches of the vessel.

The spleen is slightly enlarged, swollen, and friable. There is a supernumerary organ, the size of an English walnut, on the splenic vessel, 7 cm. from the parent structure.

There is but one kidney, the left. It is quite large; weighs 330 grams; is lobulated and strips easily from the capsule. The organ is soft and extremely friable; is pale grayish red in color; the cortex is thickened and swollen. The whole surface exhibits that peculiar, cloudy, grayish cast which denotes a parenchymatous change.

ANATOMICAL DIAGNOSIS.—Acute lobar pneumonia, which has probably been engrafted upon a tuberculosis of the right lung; acute parenchymatous nephritis.

H. R. C.
C. W. W.

III.

W. F.; age 27; nativity, Virginia; admitted to the United States Marine Hospital, Baltimore, Md., January 17, 1904, complaining of severe pain, in the left side, of one day's duration; severe cough, and scanty, tenacious expectoration. On admission his temperature was 40.6° C., pulse 120 and respiration 48 per minute. Physical examination showed breathing to be rapid and labored, shallow over the bases and more pronounced than normal over the apices of both lungs anteriorly. Vocal fremitus diminished over base of left lung posteriorly, with dullness on deep percussion over an area the size of a silver dollar 1½ inches below the angle of the scapula. In this position many fine, distinct, crepitant râles were heard at the end of inspiration. Expiration was only slightly prolonged, though distinct bronchial breathing was not present. Vocal resonance was increased in this position. The heart appeared to be normal. On the second day after admission the patient became delirious, which continued until death occurred on the fourth day after admission. Urine was scanty and highly colored and was markedly albuminous. Clinical diagnosis: Acute lobar pneumonia, left; acute nephritis, with partial suppression.

NECROPSY (18 hours after death).—Body of a poorly developed negro; post-mortem rigidity extremely well marked. The left pleural cavity contains about 20 c. c. of clear, straw-colored serum. The left lung shows a uniform consolidation of the lower lobe. The surface of section shows the lower lobe to be quite solid, dark red in color, and quite dry. The smaller bronchial tubules are filled with fibrinous plugs, the mucous membrane being swollen and injected. A torn surface through this portion of the lung shows many fine fibrinous plugs projecting from the fine bronchioles and alveoli. The upper lobe of the left lung shows some congestion, with swelling and injection of the bronchial mucous membranes. Much blood-stained, frothy serum exudes upon section. The right lung presents a condition similar to the upper lobe of its fellow.

The heart and pericardium are normal. A chicken-fat clot is found entangled in the meshes of the mitral and tricuspid valve leaflets. The left ventricle is tightly contracted.

The spleen is of normal size, but is bound down to the diaphragm by dense, fibrous adhesions.

The left kidney is of normal size, pale, grayish red in color. The capsule strips readily, and on section the organ shows a uniformly cloudy, gray surface. The cortex is slightly thickened and swollen. The right kidney shows similar characteristics to its fellow. The other abdominal organs appear normal. The brain: The dura is found to be tightly adherent to both hemispheres for 5 cm. at the vertex of the superior longitudinal fissure. The adhesions are of a fibrinous nature; they are not very recent, but can be torn through readily with the finger. The cerebral cortical vessels are deeply congested and swollen. The pia mater, both of the cortex and base of the brain, is more cloudy and more swollen than normal.

ANATOMICAL DIAGNOSIS.—Acute lobar pneumonia, left lower lobe; acute parenchymatous nephritis; meningitis, cerebral, acute.

C. W. W.
H. R. C.

IV.

J. McC.; white; age, 51; born in Indiana; was admitted to the United States Marine Hospital, Chicago, Ill., February 18, 1904, and died February 24, 1904.

HISTORY.—Had had usual diseases of childhood and two attacks of "billous fever;" for several months had been troubled with frequent micturition; from January 19 to 20, 1904, was under treatment here for influenza of mild type. On February 16, 1904, was suddenly seized with pain in region of right and then the left scapula; three hours later had a moderately sharp chill, followed by fever; soon began to cough. Growing worse, he applied for treatment. On admission had temperature of 39.7°; pulse, 126; respirations, 24; breathing was jerky, with explosive expiration, due to the pain at base of left lung. No dullness present, nor could friction rub be distinguished. The next day friction rub and characteristic pain showed presence of pleurisy at base of right lung; some pain was referred to the right scapular region. Breathing was much less

distressing. Sputum was viscid and blood tinged; on examination showed presence of pneumococci. No physical signs of pneumonia present. In afternoon light, talkative delirium set in, and patient began to perspire freely. On February 22 dullness was first noted over entire right lung posteriorly, with tympano-resonance anteriorly. Friction rub was also found at base of left lung posteriorly. Typical pneumonic breathing present on right side; aside from pleurisy at base, the left lung was quite normal. Heart action was somewhat weakened, and patient's condition not encouraging. Delirium constant. The following day (23d) stools were light colored, urine dark, and conjunctivæ icteric. Patient greatly prostrated, constantly delirious, and pulse unsatisfactory. On February 24 patient was weaker and gradually lost ground; pulse was occasionally intermittent and was of low tension. Dullness was not so wooden in character and expectoration was quite copious. Toward night his condition became very grave, and, although actively stimulated, died at 9.50 p. m.

TREATMENT.—Abundant light nourishing diet; expectorants and stimulants as needed; subcutaneous and rectal injections of normal saline solutions; oxygen by inhalation.

NECROPSY (22 hours after death).—Body that of a moderately well-nourished man; post-mortem lividity moderate; rigor mortis at a minimum. Thirty-five c. c. clear fluid formed in pericardium; heart weighed 350 grams, had stopped in systole, its muscular tissue was rather friable, all the valves were pinkish in color, but otherwise normal; all chambers of heart contained ante and post mortem clots. The right lung weighed 1,840 grams, all lobes were densely adherent to the parietal pleura and bathed in grayish-yellow pus. The lower and middle lobes were in the stage of gray hepatization; the upper lobe was deep bluish-black in color, and rather more friable than normal. The left lung weighed 490 grams, was bound down by moderately firm adhesions to the diaphragm and to the posterior and lateral parietal pleura; otherwise this lung was normal. No tuberculosis present, but numerous small calcified nodules found in the base of both lungs at the surface. The liver weighed 2,215 grams; the upper surface of the right lobe and of the right half of the left lobe were universally bound to the lower surface of the diaphragm by an apparently single adhesion; the left half of the left lobe was greatly scarred (hobnailed); on section the liver showed general chronic interstitial hepatitis. The gall bladder was unusually small and contained about 10 c. c. of thin bile. The right kidney weighed 160 grams, the left 205 grams; in both the cortex was very narrow and pale; in the superior pole of the left kidney was a small urinary retention cyst; an accessory renal artery, about one-third the size of the arteria propria, supplied the upper pole of the left kidney, entering at the internal border about 1 cm. above the hilus. The spleen weighed 290 grams, was deep bluish black in color, and of a consistency softer than normal. Appendix was only 8 cm. long, was normal, and had a mesentery for half its length. The pancreas weighed 95 grams and appeared normal. Nothing abnormal found in the intestinal tract.

L. P. H. B.
L. D. L.
C. E. B.

V.

W. S.; white male; age, 49; born in Ireland; admitted to the United States Marine Hospital, Chicago, Ill., March 2, 1904, and died March 9, 1904.

HISTORY.—Patient stated that on February 27 he first felt headache and vague thoracic pain, that he felt worse the next day, and on February 29 had a chill, severe headache, fever, and began to ache all over. On admission he appeared to be suffering from a severe neuralgic attack of influenza with moderate diarrhoea. Physical examination was negative. Magnesium sulphate and phenacetine were exhibited; on the following morning his temperature was 37.8° and patient said he felt better in all respects. That evening, however, his temperature returned to 40°, and free perspiration was present. On March 4 slight icterus of conjunctivæ was noted, bowels were still loose, and patient reported slight pain in left hypochondrium, but physical examination still proved negative. That evening he reported dizziness and pain at base of left lung in posterior axillary line. A few crackling râles could be heard at this point, and over the tricuspid area a low blowing murmur. No change occurred on the following day except a decrease in thoracic pain. On March 6 signs of pleurisy

were present over entire left lower lobe of lung, with dullness posteriorly, flat-tening laterally, and tympano-resonance anteriorly; the breath sounds over this area were somewhat tubular. On the following day all the signs of pneumonia, with added involvement of lower half of upper lobe, were present in left lung. Posteriorly there was practically complete absence of tactile fremitus over this lung, but anteriorly there was tympano-resonance and slightly augmented tactile fremitus, even when patient assumed various positions. The heart sounds were normal and slightly subdued in intensity. Delirium set in and persisted to the end. Prostration was extreme, the patient apparently laboring under profound toxæmia. On the 8th the patient's condition grew rapidly worse, the pulse growing feeble and more rapid. During the night the patient fell into a stupor and toward morning failed rapidly, dying at 8.40 a. m. without regaining consciousness.

TREATMENT.—Counterirritants were directed against the pleurisy. After physical signs of pneumonia were detected stimulants and light nourishing diet were given and cotton jacket applied. When the signs of toxæmia presented, subcutaneous injections of normal saline solution were given and stimulants—strychnia and whisky—were administered hypodermically to combat the depression. Hyoscine hydrobromate was used to control the active stage of the delirium.

NECROPSY (11 hours after death).—Body that of a well-developed male; layer of adipose tissue thick; usual amount of rigor mortis and post-mortem lividity present; 350 c. c. milky fluid, containing an abundance of fibrin flakes, found in pericardium; deposit of fibrin upon both visceral and parietal pericardium. The heart weighed 470 grams; its muscular tissue was apparently normal; the valves were competent, but all were of pink color. The right lung weighed 700 grams, was bound down in a number of places by old adhesions, but was otherwise normal. The left lung weighed 1,300 grams; posteriorly a pocket had been formed by recent pleural adhesions, and this contained 300 c. c. bloody purulent fluid. In the general pleural cavity (left) was about 100 c. c. milky seropurulent fluid, containing many fibrin flakes. The visceral and parietal pleura at the base of the left lung showed fibrin deposits and numerous recent adhesions. The lower lobe and the lower half of the upper lobe of the left lung were in a stage of gray hepatization. Remainder of upper lobe was crepitant. No signs of tubercle present. The liver weighed 2,900 grams; the capsule was greatly thickened and in places cartilaginous, but otherwise apparently normal. The right kidney weighed 210 grams; the capsule stripped off readily; both organs were congested and had a narrow cortex which in places could not be differentiated from the pyramids. The spleen weighed 350 grams, was dark-bluish in color, and somewhat friable. The pancreas weighed 90 grams and was normal in its gross appearance. The bladder was empty. The stomach and intestines were normal.

L. P. H. B.
C. E. B.

VI.

F. J.; age, 41; a native of the United States; entered the marine ward of the Buffalo Hospital of the Sisters of Charity on the 10th and died on the 15th of February, 1904.

HISTORY.—His family history is negative. He states that he has had the ordinary diseases of childhood, and had been under treatment in this hospital for typhoid fever one year ago, and the records show that during this attack his lungs were the seat of decided reaction. He further states that he has been ill for the past two weeks with grippe, contracted while working on Long Island Sound, and from which he had not fully recovered when he came to this port. Three days ago, or on the 7th, he experienced a hard chill, with pain in the right side, and for three days has suffered a great deal. On admission he is quite ill; there is severe pain in the right side, with frequent cough and expectoration of pronounced pneumonic sputum; the face is darkly suffused, and the tongue furred; the face is decidedly apprehensive; the temperature is 37.8°; pulse, 102; respiration, 26.

Physical examination shows the entire right lung in consolidation; a high-pitched percussion note, almost flat, characterizes both the middle and lower lobes, while the upper is somewhat emphysematous anteriorly, but dull pos-

teriorly. Auscultation over the lower areas gives harsh tubal breathing, with numerous loud, moist râles; over the infrascapular region there is a dry pleural friction rub extending over the mid lateral lobe; at the upper lobe there is crepitation, with the fine moist sounds, and commencing tubal breathing, from the extension of the process upward. On the left side there is purile breathing over the anterior chest wall and the moist sounds of a commencing œdema in the dependent portions of the lung. At the angle of the right scapula there is the most pronounced pectoriloquy. At this point aspiration is tried, but the needle fails to reach fluid. To this serious lung condition is added a marked paresis of the small intestine; the abdomen is greatly swollen, the note drumlike, and the distention is seriously impairing the heart's action, which is at times tumultuous. Treatment to relieve the abdominal distention: Calomel and gulacol by mouth, and the high rectal tube with turpentine enemas, are ordered and give immediate relief; the chest is enveloped in a cotton jacket and heroine given to relieve pain; general stimulation, with close attention to the overfull right heart; milk and broths.

February 11.—The condition remains unchanged; the cycle may not be accomplished until the 14th or 15th; the temperature is 38°; pulse, 100; respiration, 22. The blood pressure is 160 mm. of mercury; the abdomen still distended; the heart not so tumultuous; the sputum contains numerous diplococci of pneumonia.

February 13.—The temperature is 38°; pulse, 118; respiration, 52. The right lung is now solidified throughout; the exploring needle again fails to find pleural fluid; the left lung is œdematous throughout the lower lobe; the right heart is improved under stimulation and nitroglycerin; the urine is scanty and albuminous; the abdomen still distended; a Widal reaction is positive from the preceding typhoid; there is a leucocytosis of 17,000. Suprarenal extract is ordered to relieve the paresis of the small intestine, with hypodermatics of physostigmine; also hot and cold stupes; firing along the recti muscles, and the galvanic current. Saline infusions under the skin are ordered to influence the renal secretion.

February 14.—All the symptoms are accentuated; there is no sign of commencing resolution in the lower right lobe; the œdema on the left side is progressing; the heart is seriously compressed from the greatly distended abdomen; the temperature is 38°; pulse, 124; respiration, 58.

February 15.—Death at 8 a. m. from heart failure.

NECROPSY (held 9 hours post-mortem).—The body is emaciated; the abdomen greatly distended; rigor mortis is marked; the dependent portions are livid; there are numerous puncture points upon the chest wall, the sites of saline infusions. On section the contents of the abdomen are found of normal appearance save for the distention of the small intestine, which failed to contract when incised freely, the escaped gas leaving the gut collapsed, but widely distended; the mucosa is clean and of anæmic appearance, the glands are normal, the veins of the mesentery congested. The colon is also distended; the kidneys are engorged, their capsules peeling easily; section shows the cortex pale with poorly defined markings; the urinary bladder contains 200 c. c. of albuminous urine; the spleen is enlarged; the liver and gall bladder normal; the pancreas is normal, as are the adrenals. The diaphragm is at the sixth left interspace, and at the fourth on the right side. On removing the bony wall the left lung retracts, the right is rigid; the right pleura is inflamed, fresh lymph binding the layers and obliterating the pleural sac save at the midlobe posteriorly, where there is a collection of 250 c. c. of turbid serum; the lung is solidified, the lower and mid lobes in gray, the upper in red hepatization, and there is no sign of resolution. The left pleura is adherent to the parietes and the lung posteriorly over the upper lobe; the left lung is œdematous both in the vesicles and the connective tissues; sections float in the bath; the larger bronchi are inflamed, the mucosa covered with glairy mucus; the pericardial fluid is increased; the heart muscle is pale; the right heart is distended with semifluid blood; there is a partially decolorized clot from the aorta into the left heart; the valves are efficient. Brain and spinal cord not examined.

ANATOMICAL DIAGNOSIS.—Acute, fibrinous, lobar pneumonia, with acute, fibrinous, pleuritis limited to the right side; a left-sided bronchitis and (acute toxic) paresis of the small and large intestine.

E. W.

VII.

J. McL.; age, 65; nativity, Ireland; admitted to the United States Marine Hospital, San Francisco, Cal., November 17, 1903; died November 19, 1903.

HISTORY.—The patient uses alcoholic liquors and tobacco; had pneumonia twenty years ago, rheumatism fifteen years ago. He was taken sick three weeks ago with a bad cold, which has grown steadily worse. He now has a severe pain in his left side, dyspnoea, severe cough, and nasty expectoration. Examination shows marked dullness and increased vocal fremitus over the whole of left lung and base of right lung. There are moist râles heard over both lungs, but more apparent over apex of right lung. Heart sounds difficult to distinguish, on account of noisy breathing; pulse, 122, full and strong; temperature, 38.6°; respiration, 34. The next morning the patient's condition had slightly improved, but his strength gradually failed, and he died at 4.15 a. m. November 19, 1903.

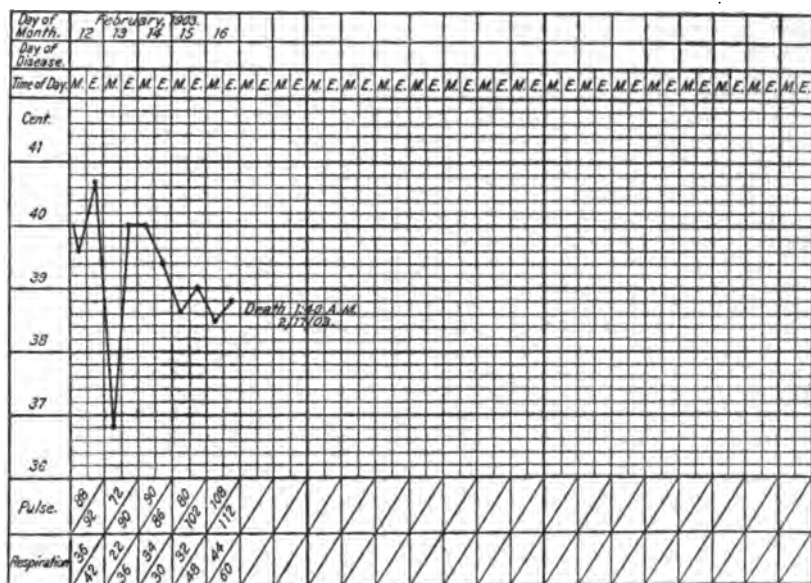
NECROPSY (10 hours after death).—Height, 173 cm.; rigor mortis well marked; post-mortem lividity present. Brain: Weight, 1,300 grams; tissue normal. On opening abdominal cavity intestines found to be of a gray color distended with gas. The transverse colon shows a constriction of one-half its diameter for a distance of 7 cm. near the hepatic flexure. Appendix very small; omentum contains considerable fat. On opening the thorax the softness of the bones is noted. The fat in the anterior mediastinum shows a slight yellow oedema; pericardium bound down to both lungs by adhesions. Heart: Weight, 470 grams. There is a "milk spot" about the size of a nickel on its anterior left aspect; a number of white branching lines are also present on its surface, which appear to be degenerated blood vessels. There is a large chicken-fat clot in the right ventricle, extending through the auricular orifice into the ventricle and up into the pulmonary orifice. The edges of the leaflets of the mitral valves are roughened and thickened; other valves normal. There are a few atheromatous spots at the base of the mitral valve and in the aorta near the aortic valve. The wall of the right ventricle is 1 cm. thick, the wall of the left 2 cm. The heart muscle is of a bright red color, the endocardium a light brown. Left lung adherent to chest wall throughout; it is removed with difficulty from the thoracic cavity. The whole lung is a solid mass, color of tissue dark reddish brown. Right lung also bound down throughout to the chest wall. All parts are solid except the posterior part of the lower lobe, which is crepitant. Spleen: Weight, 185 grams; color, pale red; cuts with slight resistance; trabeculae prominent. Left kidney: Weight, 160 grams; capsule nonadherent; pelvis contains considerable fat, cortical portion very thin, pyramids not prominent. Right kidney: Weight, 130 grams. There is a serous cyst the size of a marble on external surface; tissue cuts with greater resistance than left kidney; color, red, with minute yellow markings. Bladder empty; mucous membrane of stomach slightly congested. It is covered with yellowish-white mucus. Small intestines normal. Liver: Weight, 2,100 grams; surface brown, mottled with yellow areas; cuts with slight resistance; tissue greasy to the touch.

W. G. S.

VIII.

J. R.; age, 30; nativity, Tennessee; was admitted to the United States Marine Hospital, port of St. Louis, Mo., February 12, and died February 17, 1903.

HISTORY.—This patient had been evidently, from his extremely filthy condition, lying in neglected quarters for some weeks, though he maintained he had been on a vessel within a week. On admission he could not give an intelligent account of himself, other than he had been drinking, had caught cold, was suffering much pain in the chest, and was "feverish." Temperature, 40° C.; pulse, 88, weak; respiration, 30 per minute; shallow. Respiratory murmur lost on right side. He was thoroughly cleaned in a hot bath, put to bed, and a cotton jacket, covering entire chest, applied. A mild mercurial purge was administered, followed by quinine in 1.33 gram doses. Abundant easily digestible food (eggs, milk, and the ordinary diet) was given, of which he ate very freely. A blister was applied over the seat of pain, and with the exception of this pain the patient invariably declared that he was perfectly comfortable. Prune-juice expectoration was observed from the entrance of the patient. A tendency to rambling delirium was noticed early in the case. On February 16 a free stimulation with strychnine and whisky was begun without apparent benefit.



NECROPSY (14 hours after death).—Body that of a middle-aged, very black, negro male, fairly well nourished; rigor mortis marked; pleura obliterated; periphery of lungs covered with exuded plastic lymph; pericardium thickened and showing signs of old inflammatory action; heart hypertrophied concentrically; filled with chicken-fat clots; valves apparently normal; weight, 430 grams. Lungs: Right, hepatized throughout, adherent strongly to anterior chest wall by old and by recent exudations of lymph; weight, 1,650 grams; middle and inferior lobes breaking down, cavities filled with seropurulent matter. Left: Closely adherent by old exudations laterally and posteriorly to chest wall; weight, 800 grams; slightly congested, and friable under the knife. On removal indentation of ribs visible. Liver somewhat cirrhotic; vessels dilated; weight, 2,200 grams. Kidneys: Right, capsule adherent; rather pale and shriveled; weight, 150 grams. Left, apparently normal; weight, 200 grams. Stomach, intestines, bladder, and urethra normal. Brain not examined.

H. C. W.

J. M. G.

IX.

C. E.; age, 53; nativity, England; admitted to United States Marine Hospital, Baltimore, Md., February 27, 1904; died March 2, 1904.

HISTORY.—Admitted to the wards complaining of pain in the right chest; cough, with blood-stained, tenacious, rusty sputum; had a severe chill three days before admission.

Physical examination showed impaired resonance on percussion over the base and side of the right lung. There was increased vocal fremitus and resonance, also crepitant râles heard on inspiration along the right anterior axillary line below the axillary fold. On admission the patient gave evidence of a previous alcoholic history; was nervous and tremulous; skin was pale and leaky, and there was considerable dyspnoea. The urine was slightly albuminous and contained pale granular casts in moderate amount.

CLINICAL DIAGNOSIS.—Lobar pneumonia in the eighth day of the disease; nephritis, parenchymatous.

NECROPSY (14 hours after death).—Body of a well-developed white man; weight, about 170 pounds; height, about 5 feet 9 inches. The skin is pale lemon yellow in color. There is a large ulcer 2 inches in diameter on the right leg just above the ankle. The panniculus adiposus is extremely well marked; is pale lemon yellow in color. Section of the body shows all organs in normal position. The left pleural cavity and corresponding lung are quite normal, barring some

slight hypostasis in the posterior portion of the lung. The right pleural cavity contains about 400 c. c. of clear yellow serum. The visceral layer of the membrane covering the anterior and lateral aspects of the lung is coated here and there by irregularly shaped patches of fibrinous exudate. The lung, excepting the lower lobe, is completely solidified and is adherent at its apex. Section of the organ shows an irregularly grayish red surface of section. The organ is quite friable, and both cut and torn surfaces show the gaping orifices of the smaller bronchioles containing a central projecting fibrinous plug. The mucous membrane of the larger bronchial tubules is swollen and its capillaries deeply injected. There is a scar in the right apex, the result of a chronic tubercular process. The pericardium is normal. The heart is somewhat enlarged. The left ventricular wall is thickened and reddish yellow in color, showing evidences of fatty change in the muscular tissue. The auricles and left ventricle are dilated and filled with a mixed currant-jelly and chicken-fat clot. The mitral valves are competent; the valve leaflets are considerably thickened. The aortic and pulmonary semilunar valve leaflets are slightly thickened, but are competent. The spleen, liver, and other abdominal viscera, excepting the kidneys, are apparently normal. The left kidney weighs 180 grams. It is enlarged, soft, and pale grayish red in color. The capsule strips readily, disclosing a yellowish red mottling of the surface of the kidney. Upon section the organ presents a clouded grayish-red appearance, but upon close examination there is seen a decided general yellowish mottling of the grayish-red surface of section. The right kidney weighs 190 grams and presents characteristics similar to its fellow of the opposite side.

ANATOMICAL DIAGNOSIS.—Lobar pneumonia, right, upper, and middle lobes; chronic myocarditis, with moderate sclerosis of the mitral and aortic valve leaflets; chronic parenchymatous nephritis, with fatty change.

H. R. C.
C. W. W.

X.

J. P.; age, 45; nativity, Greece; admitted to Marine Hospital, Mobile, Ala., July 29, 1903; died July 31, 1903.

HISTORY.—Father died at 62 years of age; cause, fever; mother died at 75 years of age, drowned; one brother and one sister living, both in good health; had fever about twenty years ago; has never had any venereal disease.

PRESENT ILLNESS.—Suffered injury to palm of right hand while performing heavy labor. Hand became swollen and painful; has small abrasion on back of same which contains pus. States had two chills—one Monday and one Tuesday—followed by fever.

July 31, 1903 (two days after admission).—Complains of pain in right side; referred to right mammary region. Physical examination elicited dullness over this area; crepitant rales present; a considerable portion of upper and middle lobes seem to be involved. Patient was given ammonium chloride, aromatic spirits ammonia, and strychnine hypodermically in large doses, also nitroglycerine and normal salt solution, without effect. Died 8.45 p. m. July 31, 1903. Temperature at this time 39° C.; pulse, 140; respiration, 42.

NECROPSY (11 hours after death).—Body of a white male, apparently about 40 years of age; rigor mortis fairly well marked; post-mortem discolorations on back, buttocks, legs, scrotum, back of neck, and head; eyes open, pupils dilated, mouth closed; conglobated blood in left nostril; froth in mouth; left hand slightly swollen; abdomen distended. Body opened by long incision, reaching from chin to symphysis pubis. Diaphragm attached between eighth and ninth ribs. Heart normal; post-mortem clot in right auricle; weight, 335 grams. Lungs very dark in appearance; bleed easily on section; weight of left lung is 700 grams. The entire right lung is very much congested, the upper lobe containing pus; weight of right lung, 1,130 grams. A hard calcareous deposit, about the size of end of little finger, found between trachea and esophagus. Liver normal in appearance, bleeds easily on section, and weighs 1,715 grams. Gall bladder contains about 15 c. c. of bile.

J. H. W.

XI.

A. P.; age, 59; nativity, California; admitted to the United States Marine Hospital, Baltimore, Md., May 9, 1904, with a history of chills, cough, and pain in the left chest.

Physical examination showed dullness on percussion over the upper half of

the left chest; rather coarse subcrepitant râles heard throughout inspiration in this location. Sputum tenacious and faintly rust streaked. Urine albuminous. Six days after admission there was noticed some pitting over the præcordia, with some increased area of cardiac dullness; heart sounds distant. Death May 17, 8 days after admission.

CLINICAL DIAGNOSIS.—Pneumonia, acute, lobar (left); pericardial effusion; parenchymatous nephritis.

ANATOMICAL DIAGNOSIS.—Pneumonia, lobar left; fibrino-purulent pericarditis; chronic parenchymatous nephritis.

NECROPSY (18 hours after death).—Body of slightly built Mexican; post-mortem rigidity present. Section shows little subcutaneous fat, with all organs in normal position. The left pleural cavity is normal. The corresponding lung shows uniform solidification of the upper lobe. Section of the organ reveals a typical, gray hepatization of the upper lobe, with bronchial tubules filled with a semifluid, thick, purulent material. The larger bronchi, as they near the trachea, show extreme injection and swelling of their mucous membrane. The lower lobe is dark red, containing much blood, and is somewhat œdematous. A similar condition of pulmonary congestion, with œdema, prevails throughout the opposite lung structure. The right pleural cavity is normal. The pericardium is moderately adherent to the pleura on either side. It is distended and enlarged fully one-fourth its normal size. Section reveals an extremely interesting condition. The cavity is filled partly by about 200 c. c. of thin, cloudy, yellowish, purulent fluid, and partly by a well-organized fibrinous exudate which covers completely the visceral and parietal layers of the structure. This fibrinous structure varies from 0.3 to 0.4 cm. in thickness; is yellow, firm, and is readily detached from the underlying pericardium. The attached surface is smooth; its free surface rough, with innumerable freely projecting fibrinous shreds. It is to be regretted that inoculations on culture media were not made from the pericardial contents, since it is thought that the condition might possibly have been the result of a pneumococcus infection of this structure. The heart, beyond some slight hypertrophy of the left ventricular wall, which is 2.5 cm. in thickness, is normal and its valves are competent. The liver, which weighs 2,270 grams, is enlarged and swollen. Otherwise it shows no further pathological change. The spleen, weight 205 grams, though slightly enlarged and swollen, does not depart much from the normal appearance. The kidneys present a similar condition and may be discussed together. They are slightly enlarged (right weighs 230; left, 220 grams), their capsules strip readily, and on section they show a grayish-pink, cloudy surface of section. The cortex measures 1 cm., is thickened, pale and cloudy in appearance. The organs are typical examples of a chronic parenchymatous inflammatory process. The suprarenal capsules are normal, as are also the other abdominal organs.

H. R. C.
C. W. W.

Lobular.

P. M.; age, 58; nativity, Ireland; entered United States Marine Hospital, Baltimore, Md., September 21, 1903; died October 11, 1903.

Came in suffering with intense dyspnœa; unable to lie down and scarcely to stand; dyspnœa asthmatic in character, relieved by hypodermic injection of morphia and atropia. Gives history of such attacks at intervals for some years, but recently has had them oftener and more severely, and has pain over præcordia and "all over." Temperature, 39.6°; pulse, 140 (taken after paroxysm had passed).

Examination of thorax shows heart enlarged, apex to near midaxillary line, and impulse weak; quick and irregular; no valvular lesion made out; lungs give signs of general bronchitis, with emphysema about apices; there are a number of very small râles and some "wheezing;" examination of urine negative. The case did badly from the beginning; there were recurrent attacks of dyspnœa, and the heart was always very weak. During the attacks of dyspnœa the intercostal spaces would sink in as in asthma. Albuminuria appeared later and the urine became scanty. He died of cardiac weakness.

NECROPSY (30 hours after death).—Man of medium build; marked hypostatic congestion of neck and face, also some cutaneous congestion on lateral and posterior surfaces of body and legs; hairy development excessive; normal fat on chest and abdomen; intestines distended with gas; omentum normal, almost entirely free from fat; cartilages of ribs soft, and but little changed by age.

On opening thorax the left lung collapsed; the right lung collapsed but little, being held by adhesions in front. Left lung presents no adhesions; passive congestion in posterior part; emphysematous on front edges, with many spots of consolidation; lobular pneumonia; apices very emphysematous. Right lung adheres to anterior wall and none other; both lungs markedly emphysematous, especially at apices and on front edges, with many and considerable patches of lobular pneumonia; mucous membrane of bronchi swollen and bronchi contain tenacious mucus; hypostatic congestion in posterior portion of neither lung is marked; this congestion only at lower end of posterior portion. Area of heart uncovered by lung above normal; pericardium contains 50 c. c. of clear fluid; heart in diastole widely dilated, is large; aorta, pulmonary vessels, superior and inferior vena cava normal in size; ante-mortem clot in right auricle; right auricle distended and has rather thin walls; walls of left ventricle extremely thin, about 1 cm. thick above and at lower part 0.5 cm., no more; cavity enormously dilated; right ventricle also dilated, but not markedly so; mitral valves are not competent, but are normal; aortic valves normal; heart weighs 380 grams. Abdomen: Intestines empty, distended with gas; gall bladder nearly empty; it contains a small amount of very dark-brown bile. Liver weighs 1,770 grams; it has a scar on lower part of right lobe; on section it is normal, except at scar, which shows increased connective tissue from surface to deep down in liver. Kidneys: Right weighs 165 grams; it is large, congested, and capsule rather adherent; on section marked congestion, passive; cortex well marked; kidney is soft and friable. Left weighs 190 grams; it is large, congested, and has on section same appearance as right, only more marked; capsule mainly not adherent. Both kidneys present marks of intense passive congestion. Appendix normal in position and size; 10 cm. long; meso appendix within 1 cm. of tip. Spleen weighs 215 grams; it is hard, about normal in size, and normal on section. Other viscera not examined.

H. R. C.

PULMONARY HEMORRHAGE.

J. U.; age, 48; born in Germany; was admitted to United States Marine Hospital, Stapleton, N. Y., September 15, 1903, and died October 8, 1903, at 6.30 a. m.

HISTORY.—Had the usual diseases of childhood; malaria four years ago and syphilis in 1893. Present illness began about six weeks previous to his admission to hospital. First symptom noted was hoarseness, which was marked and persistent. This came on rather suddenly. For three weeks prior to admission patient was treated at the city office, New York, as an out-patient, for the above condition. As no improvement was observed he was sent to hospital on September 15. In addition to the hoarseness, a soreness in the larynx and pain in right lung developed. This pain was deep seated and was described as beginning about the region of the diaphragm anteriorly and extending to apex. Patient slept well and had a fairly good appetite. General condition was very good. Temperature and pulse were normal.

PHYSICAL EXAMINATION.—Palpation and percussion negative. Auscultation revealed harsh breathing over whole of anterior surface of right lung. No moist râles. Left lung normal. Heart sounds normal. Patient expectorated freely a frothy mucus. Microscopic examination of sputum showed no tubercle bacilli, though repeated and careful examinations were made. Laryngoscopic examination revealed no ulcers. Toward the last the hoarseness became worse, and patient was unable to sleep. On October 5 patient fainted while in water-closet and said, on being revived, that his nose had bled some a short while previously. Treatment consisted of inhalations of medicated vapors, cough mixtures, and the iodides, together with stimulants and a generous diet. The usual counterirritants were applied both over the larynx and over the right lung. On the morning of October 8, while attempting to go to the bathroom, patient died suddenly with hemorrhage from the lungs.

NECROPSY (24 hours after death).—Pupils equally dilated; rigor mortis and post-mortem lividity marked; body well developed and muscular; subcutaneous fat abundant. The larynx was dissected out and divided from trachea down to about one-half inch below the cricoid cartilage. Examination of the interior of the larynx showed slight erosion of mucous membrane, but no ulcers or cicatrices. Vocal cords pale and somewhat atrophied. Dissection of the neck gave no evidence of any tumor having pressed on recurrent laryngeal nerves. Upon incising the trachea below cricoid cartilage it was found to be

filled with dark fluid blood, which poured out when trachea was allowed to retract into thoracic cavity. Inspection of the organs within thorax showed that both lungs collapsed slightly when pleural cavities were opened and that the heart and large vessels were in a normal condition. No fluid was found in either pleural sac or in the pericardial sac. Lungs mottled and dark; right lung weighed 570 grams; left, 540 grams. On section, all ramifications of bronchi and bronchioles of both lungs were found to contain frothy fluid blood. No cavities or areas of consolidation were found, and although a thorough search was made the vessel from which the hemorrhage proceeded could not be found. Mucous membrane of trachea and bronchi not congested. The heart was normal on section; weight, 325 grams. The abdominal cavity was opened and all the organs inspected in their normal positions. No peritoneal adhesions; lymph nodes of mesentery not enlarged. All organs appearing in a perfectly normal state, they were not removed. Brain not examined.

H. McG. R.
P. H. B.

PYÆMIA.

M. M.; age, 39; nativity, Germany; admitted to the United States Marine Hospital, Stapleton, N. Y., September 15, 1903; died October 6, 1903.

HISTORY.—Family and personal history were negative. For three weeks previous to admission to hospital patient had been ill on board ship. The trouble began with a feeling of weakness, followed by chills and sweats. At the time of admission patient appeared profoundly anæmic and was extremely weak. Had bedsores on posterior aspect of right elbow joint and over sacral region. Examination of blood showed no malarial organisms. Only 30 per cent hæmoglobin present. Blood count gave an enormous increase of white blood cells, and a diminution to nearly half the normal number of the reds. Examinations of urine and sputum were negative. Temperature of patient varied from 36.4° C. to 38° C. Pulse ranged from 78 to 100, and was always weak. Discharge of pus from region of anus indicated an ischio-rectal abscess, but patient was too weak to undergo operation. Patient was delirious nearly all the time, and failed to respond in any way to treatment.

NECROPSY (18 hours after death).—Body markedly emaciated and presented bedsores on right elbow and over sacral region; ankylosis of right elbow; rigor mortis marked; cadaveric lividity slight; practically no subcutaneous fat on incision; pleural surfaces adherent over greater portion of both lungs, but no fluid in pleural sacs. Lungs very small, and present dark, nearly black spots upon gray surface; both crepitate and float; hypostatic congestion marked; right lung weighed 370 grams; left, 390 grams. Pericardial sac contained small amount of fibrinous exudate. Heart soft and flabby, filled with dark fluid blood, apparently fatty; weight, 320 grams. Peritoneum showed extensive adhesions in posterior portion of abdominal cavity. Intestines distended with gas; small amount of fat in mesentery and omentum. Mesenteric lymph nodes not enlarged. Spleen was adherent to abdominal wall on convex surface; on inner side it was covered with a fibrinous exudate. Weight of spleen, 160 grams; on section was dark, almost black. Liver relatively large; weight, 1,400 grams; apparently normal. Capsules of kidneys strip easily; both normal in appearance on section. Stomach small. On examination of ischio-rectal fossa pus was found in abundance, having burrowed about in ischio-rectal region. An interesting feature of the case was the very small amount of blood found in the body while performing the autopsy—very little even in the veins and large arteries.

H. McG. R.
P. H. B.

TUBERCULOSIS.

Lungs.

I.

G. W. H.; age, 52; nativity, Michigan; color, white; admitted to the United States Marine Hospital, San Francisco, Cal., February 16, 1904; died February 29, 1904.

HISTORY.—Had a chancre nine years ago; African fever thirty years ago; family history negative; diarrhea more or less steadily for about four years, which has grown much worse in the last three months; now has to go to stool

many times daily; has lost greatly in weight and is very short of breath; very weak and emaciated; dullness over both lungs; vocal and tactile fremitus much increased, particularly over right lung; cogwheel respiration over right lung; few large dry râles heard over apices and base of left lung; heart action regular; skin very anæmic; cough and considerable purulent expectoration containing numerous tubercle bacilli; trace of albumen in the urine; irregular temperature. The patient's condition rapidly became worse, delirium supervening. The diarrhea did not abate, but the expectoration diminished. Death occurred as stated above.

NECROPSY (27 hours after death).—Body emaciated; rigor mortis and post-mortem lividity present; left pupil widely dilated. A urethral discharge is present. Brain: Weight, 1,305 grams; on removing the calvarium the condition of the skull cap, the brain case, the sinuses and vessels and the brain and its membranes noted; the arachnoid and pia are congested. Thorax: The inner borders of the lungs are retracted; the pericardium is strongly bound to the left lung; its cavity contains a moderate amount of clear, yellowish fluid. The heart is small, weighing 215 grams; on the surface of the right ventricle is a whitish plaque size of a nickel; the surface is pale brown in color and the heart substance is flabby, and cuts with the usual resistance showing a pale-brown cut surface; the left ventricle contains a white clot; the right auricle and ventricle contain mixed clots; the endocardium is smooth in all the cavities; the aortic and pulmonary valves are competent to the water test; the mitral orifice admits three fingers, the tricuspid four; the mitral valve contains several hardened yellowish plaques; the tricuspid valve is thickened and somewhat atheromatous; the thoracic aorta contains atheromatous patches. The left lung is adherent by a few bands posteriorly and at the apex, and weighs 725 grams; crepitation is fairly good throughout; the surface is of slate-gray color above, dark red below; hardened nodules are felt in the apex and in other places; section of the upper lobe is purulent and frothy, showing hardened, yellowish masses; section of the lower lobe is bloody and frothy; the right lung weighs 1,150 grams; it is strongly bound down posteriorly and about the apex and by one band to the diaphragm; the surface is mottled red and black; there is a circumscribed pleural effusion; the entire lung is solidly infiltrated except for a small crepitant area in the middle lobe and a large fluctuating mass in the apex; section of the lung shows it to be a mass of caseous material except for the presence of large cavities in the apex and middle lobe; the right pleural cavity is obliterated; the nerve trunks are normal; the diaphragm is adherent to the base of the right lung all over and to the left base by a fibrous band. Abdomen: The great omentum is thin, retracted, and contains almost no fat. The spleen weighs 85 grams; it is small, the surface wrinkles easily, and is mottled blue and brown; there are several fine, fibrous plaques in the capsule; section gives about normal resistance, is bloody, and the pulp is prominent. The left kidney weighs 120 grams; the external surface is smooth and pale and the fibrous capsule strips readily; section gives normal resistance and a pale color, showing fatty change. The right kidney weighs 110 grams and is in a condition similar to that of the left; the suprarenal capsules, urinary bladder, organs of generation, rectum, and duodenum are normal. The stomach contains a quantity of dark, liquid material; the mucus membrane is very anæmic and shows hemorrhagic areas; the gall ducts are patent. The gall bladder is distended with bile and contains four gall stones of pea size and of irregular conformation. The liver weighs 1,320 grams; the external surface is pale and mottled with yellowish areas; it cuts with slightly diminished resistance, showing a pale surface and extensive fatty change. The pancreas and solar plexus appear normal. The mesentery is filled with enlarged, hardened, yellowish lymph glands. The walls of the small intestine show extensive ulceration opposite the mesenteric attachment. A few small areas of ulceration are present in the ascending colon. The vermiform appendix is very small and contains in its wall a small, localized abscess, which does not occlude the lumen. The great vessels are apparently normal.

ANATOMICAL DIAGNOSIS.—Congestion of arachnoid and pia mater; adhesions of pericardium and left lung; brown atrophy of heart; arteriosclerosis; chronic obliterative pleuritis; circumscribed pleural effusion; chronic pulmonary tuberculosis; renal and hepatic fatty degeneration; nonobstructive gall stones; tubercle of mesenteric lymph glands; tubercular ulceration of small and large intestines; abscess of vermiform appendix.

C. R.
W. G. S.

II.

S. W. W., age, 46; born in New York; admitted to United States Marine Hospital, Chicago, Ill., July 4, 1903; died August 20, 1903.

HISTORY.—Has always been exceptionally robust, in spite of continued dissipation, until last spring. At that time he began to feel languid and vaguely uncomfortable, and for some time he was in another marine hospital, according to another patient, in a condition of talkative delirium. Before admission he had been drinking heavily to forget his discomfort. The week before admission he had sweats and pain in the left chest. On admission he was filthy from neglect, and was sleepless, trembling, and on the verge of delirium tremens. There were no signs or symptoms referable to anything but alcoholism. During his stay in the hospital he was in a condition of nervousness and excitement. At first he did not sleep at all without the use of hypnotics, and at no time were these effectual in quieting him entirely. Later he fell into a state of continued talkative dreams, from which he could be roused at any time, but relapsed after a few minutes and toward the last immediately. He was on one or two occasions awake and quiet, but only for an hour or so, and occasionally asleep and quiet; but as a general rule he was twitching, tossing, and trying to get out of bed, and making some kind of noise all the time. One night he had to be removed from the ward to allow the other patients to sleep.

On admission, and until August 2, no signs of pulmonary disease were discoverable except occasionally cough and mucopurulent sputum, and mucous râles over the left apex in front, with an occasional whistling râle on the right side.

There was some expectoration, but repeated staining showed no tubercle bacilli until August 4. On the dates mentioned dullness on percussion was discovered over the left apex, and tubercle bacilli in the sputum. The consolidation increased, and also the expectoration, from that time until death.

At first the bowels were constipated, requiring frequent cathartics. Later there was diarrhœa, the stools at first being voluntary, later involuntary. They were frequent, copious, and watery. For a few days before death the stools showed an increasing tendency to become normal. After the immediate effects of the alcohol wore off the stomach became efficient and remained so until death. As the symptoms suggested some form of autointoxication, normal salt solution was given by the rectum in doses of 1,000 c. c. from July 13 to 24. At first this was well borne, but later had to be discontinued because it produced severe pain in spite of large quantities (4 c. c.) of tincture of opium.

The urinary apparatus acted normally throughout the course of the disease. The treatment was principally symptomatic. Alcohol was administered throughout the disease in considerable doses in the form of sherry wine or brandy.

NECROPSY (10 hours after death).—Body that of a poorly nourished male, about 45 years old. Small bed sore over the sacrum; hypostatic congestion marked in dependent portions; scar in left umbilical region about 2 inches long; subcutaneous fat almost absent; muscles wasted but normal in color. About 100 c. c. clear fluid in pericardium. No fluid in right pleural cavity. Right lung weighs 810 grams; deeply pigmented; no cavities found in apex; a few solid nodular masses are noticed in apex; sections of the lung from every portion floated in water. Left lung weighed 1,850 grams; deeply pigmented and unusually adherent, the adhesions being recent, easily loosened. Large cavity in middle of upper lobe containing about 30 c. c. of greenish-yellow muco-pus. On section the inner part of the upper lobe is full of small cavities, discharging a greenish-yellow fluid. Substance of the upper lobe sinks in water. Lower lobe, the entire substance is full of tubercles, some solid, some broken down. Small sections sink in water. Liver weighs 2,070 grams; nonadherent; substance pale and rather tough; lobules well defined. Bladder contains about 50 c. c. of urine. Stomach and intestines slightly congested, otherwise normal. Heart weighs 300 grams; contains post-mortem clots; muscular tissue not friable, and the valves to all appearances are normal. Spleen weighs 140 grams; normal in appearance and consistency. Left kidney weighs 170 grams; capsule is adherent in places. Right kidney weighs 180 grams; capsule strips off readily, and organ is to all appearances normal. Pancreas weighs 90 grams; Brain weighs 1,300 grams. There is a slight adhesion of dura to brain substance at the upper end of the Rolandic area. No tubercles are found on the membranes and the brain substance is to all appearances normal.

N. R.
C. E. B.

III.

N. F.; age, 45; nativity, Nova Scotia; admitted to the United States Marine Hospital, Boston, Mass., on January 20, 1904, and died January 21, 1904.

HISTORY.—Family history—father and two brothers died of consumption, mother of old age; three brothers alive and well; paternal grandparents lived to an old age.

PREVIOUS HISTORY.—Soft chancres one year ago; moderate drinker and smoker. History very unsatisfactory, as patient was very nervous and evidently badly frightened; admitted night sweats, cough, loss of weight, and expectoration of yellow material, but statements were contradictory and variable.

PRESENT HISTORY.—Patient complained of pain in right side and soreness in chest and limbs.

PHYSICAL EXAMINATION.—On inspection the patient showed marked emaciation, and both clavicles were very prominent. On auscultation there were crackling râles and friction sounds over the entire left lung and right upper lobe. On percussion there was dullness over both apices. Vocal fremitus increased on both sides. Dyspnoea marked and patient very weak.

TREATMENT.—Patient put to bed and given heroin cough mixture, 5 c. c. every four hours; also the elixir of iron, quinine, and strychnine, 5 c. c., t. i. d. *January 21, 1904.*—Patient was a little better this morning and seemed a little stronger. When seen, at 2 p. m., was feeling a little stronger than in the morning. He suddenly died, however, at 3.50 p. m.

NECROPSY (14 hours after death).—Body was that of a well-developed, but emaciated, man. Tattooed with star, spread eagle, stars, shield and flag on back of right hand, and two hearts pierced by an arrow on back of left hand. There was a small scar on the glans penis, just above the frenum; post-mortem rigidity well marked; post-mortem lividity fairly well marked. Usual incision was made in the median line. Thorax: Pleura was adherent, and the pleural cavity was filled with a grumous fluid containing many shreds. Right lung presented a shaggy appearance, especially at the apex; at its base was a large cavity, and in the interior of lower lobe were numerous small cavities and many tubercles. The anterior mediastinal and the midperibronchial glands showed tubercular processes; weight, 1,790 grams. Left lung was firmly adherent to the ribs and presented numerous millary tubercles. The upper lobe showed large cavity; weight, 550 grams. Pericardium contained 75 c. c. of straw-colored fluid. Heart was normal and weighed 440 grams. Left ventricle contained small post-mortem clot; right ventricle contained an ante-mortem clot. Abdomen: Liver showed chronic passive congestion; weight, 1,670 grams. Both kidneys were normal; weight, 220 grams each. Stomach greatly dilated and presented marked diminution in thickness of its coats. Large and small intestines were normal. Bladder was normal. Pancreas was normal; weight, 90 grams. Spleen was normal; weight, 150 grams. Brain was considerably injected, but otherwise normal; weight, 1,470 grams.

R. M. W.
J. D. F.
W. C. R.

IV.

A. J. K.; age, 32; nativity, Nova Scotia; was admitted to the United States Marine Hospital, Boston, Mass., on April 6, 1904, and died April 18, 1904, at 10.35 p. m.

HISTORY.—Family history: Father died of old age and mother died of cancer.

PREVIOUS HISTORY.—Had influenza once; otherwise had always been well.

PRESENT HISTORY.—Has been sick for the past month; lost much weight, coughs much, and expectorates a yellowish material; has had two hemorrhages from the lungs, and feels weak all over; has some headache, bowels irregular, and appetite poor.

PHYSICAL EXAMINATION.—Patient was extremely emaciated. There was dullness over both apices and entire left lung; over left apex large and small moist râles. Heart and abdominal organs normal. Sputum contained the tubercle bacillus.

TREATMENT.—Heroin cough mixture, 5 c. c., t. i. d., and during the night; elixir of iron, quinine, and strychnine, 5 c. c., t. i. d.; nutritious diet and rest in bed.

April 9, 1904.—Felt much better to-day; not so much cough and stronger,

April 12, 1904.—Had a severe hemorrhage from the lungs this morning. The hemorrhage was controlled by the use of salt and cracked ice and a hypodermic of morphine; patient was very weak, and it was necessary to stimulate him with strychnine and whisky.

April 14, 1904.—Patient very weak and rapidly falling; stimulants used daily.

April 16, 1904.—Very weak; stays in bed all the time; apt to pass away any hour.

April 18, 1904.—Died to-day at 10.35 p. m.

NECROPSY (12 hours after death).—Body that of a poorly nourished, much emaciated young man; post-mortem lividity and rigidity well marked. Thorax: Heart and pericardium were normal; heart weighed 420 grams. Lungs: Right lung showed, near the base, an old scar; weight, 870 grams. Left lung was adherent throughout, and presented, near the apex, a large cavity and numerous smaller cavities; weight, 600 grams. Throughout the entire lung were millary tubercles. The anterior and posterior mediastinal glands were greatly enlarged. Abdomen: Liver presented chronic passive congestion; weight, 1,300 grams. Spleen was normal; weight, 170 grams. Right kidney was normal; weight, 220 grams. Left kidney was normal; weight, 180 grams. Intestines were normal. Pancreas was normal; weight, 160 grams. Brain was normal; weight, 1,400 grams.

R. M. W.
W. C. R.
J. D. F.

V.

J. M.; age, 20; nativity, Russia; color, white; admitted to the United States Marine Hospital, San Francisco, Cal., July 27, 1903; died February 2, 1904.

HISTORY.—Family history negative. Gonorrhœa five or six times, the last about six years ago; chancres about ten years ago; malarial fever three, and rheumatism eight years ago. About 18 months ago he contracted a severe cold which never left him. This was accompanied by profuse expectoration, and followed by loss of weight, night sweats, hæmoptysis, and involvement of both testicles; the latter were subsequently removed by operation. He was transferred to Fort Stanton, N. Mex., where he remained some time but failed to improve, and in consequence left that station of his own accord. After arriving in San Francisco he applied for and was granted admission to this hospital, where he stayed until the day of his death. Immense numbers of tubercle bacilli present in sputum.

NECROPSY (21 hours after death). Body greatly emaciated; rigor mortis not marked; post-mortem lividities present; anchor tattooed on right forearm; skin dry and somewhat scaly; clavicles and ribs especially prominent. Brain: The calvarium was removed, and the skull cap, brain case, sinuses and vessels, and the brain and its membranes were apparently normal; all are apparently negative; weight of brain, 1,555 grams. Thorax: The anterior mediastinum contains a mass of enlarged and caseous lymph glands. The heart weighed 270 grams. Its muscular tissue was soft and flabby, pale in color, and cut with normal resistance. The ventricles contained small white clots extending up into the aorta and pulmonary artery; the auricles were empty. The mitral orifice admitted three fingers, the tricuspid four; both of these valves appeared normal. The endocardium throughout appeared smooth and shining. The aortic and pulmonary valves were competent to the water test. The pericardium was strongly adherent to both lungs, and its cavity contained a moderate amount of clear, straw-colored fluid. The right lung was strongly bound by fibrous bands to the pericardium, and the layers of the pleura were adherent about the upper lobe and the posterior border; there was one fibrous band attached to the diaphragm. The right lung weighed 1,570 grams; did not collapse; the external surface was of mottled slate color, and there were firm adhesive bands in the interlobular fissures. In the lower part of the upper lobe, and in the middle and lower lobes, were numerous hard nodules and between them some crepitant tissue. The upper portion of the upper lobe was a fluctuating mass, found on section to contain about 300 c. c. of thick pus. Section of the rest of the upper lobe and the middle lobe showed a mass of caseous nodules and many small cavities filled with pus. Section of the lower lobe showed nodules of various sizes. The left lung was bound to the pericardium and chest wall in a manner similar to the right lung. Its weight was 1,000 grams. There was present in the upper lobe a cavity of nearly the

same size as that described in the right, which cavity was ruptured on removing the lung from the body. Many yellowish, caseous nodules occurred throughout the remainder of the lung, which contained more crepitant tissue than did the right lung. The great vessels and nerve trunks were normal. The diaphragm on the right side reached to the lower border of the fifth rib; on the left to the upper border of the sixth. Abdomen: The peritoneal cavity contained a considerable quantity of clear, straw-colored fluid; its layers were smooth and free except about the spleen, where there were adhesions involving also the splenic flexure of the colon. The great omentum was very thin, friable, retracted to the left, and contained almost no fat. The spleen weighed 225 grams. It was strongly adherent to the stomach and colon. It was much enlarged, hardened, and of mottled black and brown color externally, with roughened surface. The capsule was rather tense and wrinkled. On section increased resistance, reddish cut surface, firmness of pulp, and increase in interstitial fibrous tissue were noted. Left kidney weighed 220 grams, was enlarged, very pale and smooth externally; no perinephritic fat present; the fibrous capsule stripped easily, leaving a smooth surface. On section there was diminished resistance, light yellowish color of cortex and medulla with reddish transverse striations, and dark color of the pyramids. The right kidney weighed 230 grams, and was in a condition similar to that of the left one. The suprarenal capsules were normal. The urinary bladder contained about 150 c. c. of clear, yellowish urine, and was normal. The organs of generation were normal, except the testicles, which are absent, and the presence of a phimosis. The rectum was normal, also the duodenum. The stomach was moderately distended with gas and liquid matter; the cardia was adherent to the splenic flexure, spleen, and abdominal wall. The gall ducts were patent, and the gall bladder contained liquid bile. The liver weighed 1,600 grams. The surface was pale, roughened and granular. The hepatic tissue cut with increased resistance, and showed a pale surface with increase of fibrous tissue. The pancreas, solar plexus, mesentery, and small intestines were normal. The large intestines were normal except for the presence of fibrous adhesions at the splenic flexure of the colon. The vermiform appendix and the great vessels were apparently normal.

ANATOMICAL DIAGNOSIS.—Tubercle of bronchial lymph glands; pericardial and pleural adhesion; chronic fibrous pleuritis; chronic bilateral pulmonary tuberculosis; moderate ascites; old, localized peritoneal adhesions; atrophy of great omentum; chronic splenitis; subacute nephritis with fatty degeneration; absence of testicles; phimosis; hepatic cirrhosis.

C. R.
W. G. S.

VI.

J. B.; age, 56; nativity, Ohio; was admitted to the United States Marine Hospital, St. Louis, Mo., September 10, 1903, and died January 30, 1904.

HISTORY.—The history was that of years of hard work and alcoholism with, latterly, complete breakdown and helplessness. He sought relief from an annoying cough which he deemed the cause of his debility. On admission his temperature was 37.6° C.; respiration, 24; pulse, 80. These were the average records throughout his stay. On auscultation, moist râles were found throughout both lungs. He was very pale and very feeble. Treatment was supportive, stimulating, and nourishing.

NECROPSY (10 hours after death).—Body that of a fairly muscular, but greatly emaciated, elderly white male; rigor mortis well established. Right lung adheres to thoracic wall throughout, and it can not be removed. On section (in place) find nearly entire superior lobe occupied by large cavity; entire lung very much contracted; weight (estimated), 250 grams. Left lung adheres posteriorly and laterally to thoracic wall; very much contracted; nodular; apex contains abscess of 60 grams capacity. Inferior lobe contains many minute cavities; weight, 720 grams. Bronchial tubes are thickened and contain large amount of muco-purulent matter. Heart: Surface pale and covered with thin layer of fat; wall thin and flabby; valves normal; weight, 245 grams. Liver slightly enlarged; weight, 1,170 grams; capsule somewhat thickened. Gall bladder normal, contains about 15 c. c. of pale yellow bile. Kidneys: Capsule adherent; pelvis contracted; weight, 150 grams. Left kidney: Capsule adherent and somewhat thickened; pelvis distended and containing about 25 c. c. of limpid fluid; weight, 195 grams. Stomach normal. Spleen soft; cap-

sule adherent; weight, 170 grams. Appendix normal; length, 10 cm. Bladder very much distended, containing about 500 c. c. of pale urine. Mesenteric glands very much enlarged. Other organs normal.

H. C. W.
J. M. G.

VII.

L. M.; colored; age, 52; admitted to United States Marine Hospital, Cincinnati, Ohio, December 15, 1903, died January 12, 1904.

HISTORY.—Patient entered complaining of shortness of breath, cough, pain in back, and a "heavy feeling" over the chest. Family history negative; has always been well with the exception of a severe cough, which he has had for some time; denies syphilis; was circumcised for paraphimosis at this hospital one month ago.

PRESENT STATE.—The cough is severe at times and accompanied by a purulent viscid sputum; has fever every afternoon and night sweats; shortness of breath is marked with an oppressive feeling over chest.

PHYSICAL EXAMINATION.—Poorly nourished man; has an anxious facial expression; pupils equal and react normally to light and accommodation. The tongue is covered with a thick white coating; no marks of syphilis on skin. Apex impulse is seen below sixth rib and one inch external to midclavicular line. Palpation reveals increased tactile fremitus over entire right lung, with absence of tactile fremitus over lower left lung. Dullness is marked over right upper thorax. Moist and coarse râles of various kinds are heard over both lungs, with bronchial breathing and increased vocal fremitus. Expiration lengthened. A diastolic murmur is heard over aortic cartilage, harsh in character. The heart dullness is increased downward and toward the left and is continuous with a flatness in left lower thorax. Abdominal organs appear normal under examination.

December 16.—Patient had several free actions of the bowels. Feels very weak; breathing is labored. Urine had specific gravity of 1.015, was acid in reaction, light amber in color, and contained traces of albumin. Sputum examination showed abundant tubercle bacilli. In spite of tonics and creosote patient grew steadily worse and died at 4.50 a. m. January 12, 1904.

NECROPSY (5 hours after death).—Post-mortem rigidity well marked; body that of a poorly developed, emaciated negro. Opening the thorax, the pericardium was incised and about 40 c. c. of a straw-colored fluid was found therein. The heart was markedly enlarged; its muscular tissue was pale and degenerated. The aortic leaflets were thickened and somewhat retracted, which caused a slight insufficiency. Other valves normal. Weight of heart, 450 grams.

The right lung was free from adhesions. It was heavy and did not float in water. On section one large cavity the size of a walnut was found in apex, the whole lung was in a stage of hepatization, and a dark sanguineous fluid exuded. Many miliary tubercles were noted scattered throughout the lung tissue. Weight of right lung, 1,020 grams. The left lung was retracted upward, backward, and inward toward the spine. It contained no cavities, but otherwise was in same state as right lung. The visceral and parietal pleura were adherent almost throughout. Weight of left lung, 975 grams. Abdomen: Stomach was smaller than normal. Intestines normal, except the descending colon, which was elongated and thickened. Some enlargement of mesenteric glands was noted. Liver normal; weight, 1,975 grams. Gall bladder free from calculi and apparently normal. Kidneys were to all appearances unaffected, except the right kidney, which had in its cortex a large cyst the size of a filbert. Capsules stripped readily; right kidney weight, 210 grams; left kidney weight, 220 grams. The spleen gave appearances of cloudy swelling and its surface was studded with small calcareous nodules; weight, 270 grams. Appendix not inflamed and was free from concretions; length, 8 centimeters.

J. W. S.

VIII.

S. P.; age, 63; nativity, England; color, white; admitted to the United States Marine Hospital, San Francisco, Cal., August 15, 1903; died November 27, 1903.

HISTORY.—Was previously under treatment in this hospital for paralysis of the right arm and leg. Later, signs of pulmonary disease appeared. Discharged August 14, 1903, improved as regarding the former trouble; readmitted

on the following day for treatment of the latter disease. The signs and symptoms present were severe cough, profuse expectoration, night sweats, loss of weight, increasing dyspnoea and weakness, retraction of the left chest, dullness in left upper lobe, tenderness over right apex, numerous moist rales in left lung, heart to left of mammary line. Tubercle bacilli could not be demonstrated in the sputum. Urinalysis showed nothing except low specific gravity. September 25 an apoplectic attack was experienced, with return of paralysis and loss of consciousness; the latter was partially recovered later. Feces and urine were passed involuntarily, the pupils became uneven, he groaned and muttered and rolled from side to side. Incontinence of feces was followed by obstinate constipation, followed again by diarrhoea; appetite returned and became ravenous; expectoration ceased entirely. November 25 he suddenly lost power to swallow food and there was a recurrence of the paralytic phenomena. His condition became rapidly worse. Shortly before death tremors and occasional decided movements were observed to occur in the affected right arm. Death took place November 27 at 9.30 a. m.

Necropsy (5 hours after death).—Rigor mortis and post-mortem lividity present; right pupil larger than left; the mouth contains frothy fluid; over the left shoulder blade and on the left ankle are several abraded areas. The left chest is depressed. General emaciation is present. There is moderate scoliosis. Brain: The dura mater is adherent to the brain along the margins of the superior longitudinal sinus. In the internal capsule and optic thalamus of the left side there are hemorrhagic areas and softening. The walls of the left middle cerebral artery are rigid and calcareous. The weight of the brain is 1,230 grams; the remainder of the brain is normal. The body opened by a long median incision extending from the chin to the pubes. The larynx, tongue, fauces, tonsils, and beginning of oesophagus and trachea removed and examined. All are coated with frothy, foul-smelling mucus. The larynx was divided posteriorly by scissors. The false vocal cords are normal. The ventricle of the larynx contains the before-mentioned mucus. The true vocal cords are slightly hemorrhagic at their inner borders. Thorax: On removing the sternum the costal cartilages of the first ribs are found ossified. The right lung extends across the median line about three inches, covering the pericardium. The entire lung is emphysematous. It adheres to the diaphragm by one fibrous band. Elsewhere the lung is free in the pleural cavity. The weight is 970 grams. The anterior surface is mottled gray and black; the posterior surface is dark red in color. Crepitation is good in the lung except in the posterior portion of the lower lobe, where it is somewhat diminished. On the anterior surface of the upper lobe is seen a large healed scar, beneath which section reveals a calcareous nodule. Section of the posterior part of the lower lobe is bloody and frothy and gives increased resistance; otherwise examination is negative. The left lung is greatly retracted, and the layers of the pleura are adherent all over. There are strong adhesions to the pericardium, and when the lung is removed the parietal pleura is torn off with it. The weight is 680 grams. The tissue as a whole is much denser than that of the right lung, but it floats in water. The external surface is dark and mottled, and there is very little crepitation. Section of the upper lobe resembles boiled meat and is very frothy and bloody—this in the upper half; the lower half of the lobe contains some crepitant tissue in a kind of network of healed scar tissue and hardened yellowish masses, the section cutting with much increase in resistance; essentially the same may be said of the lower lobe. The heart weighs 325 grams; its external surface is covered with fat; it cuts with increased resistance. The walls of the left ventricle are thickened, and the cardiac muscle is pale and shows considerable increase of interstitial tissue. The left ventricle is empty of clots. The right ventricle contains a small dark clot. The aortic and pulmonary valves are competent to the water test. The mitral and tricuspid valves are normal, though the mitral valve is rather firmly related to a dark clot, which, however, can be separated from it without leaving a denuded surface. The right auricle contains a similar clot. The great vessels and nerve trunks appear normal. The diaphragm on the right side extends to the fifth interspace; on the left side to the sixth rib. The pericardium is covered by the overlapping portion of the right lung, and is adherent to the left lung. Abdomen: The peritoneum appears everywhere smooth and shining. The great omentum is normal. The spleen weighs only 85 grams, and is adherent to the diaphragm. The surface is of lead color and wrinkles easily. Section shows increase of interstitial fibrous tissue and firmness of pulp. The left kidney weighs 165 grams, is smooth externally and dark in color. The fibrous capsule is adherent in places and strips off with some diffi-

culty. Section shows increased resistance and a dark and bloody surface. The cortical markings are fairly distinct, and the pyramids are not prominent. The right kidney weighs 130 grams, and its condition is similar to that of the left organ except that the cortex is thinner and the markings are less distinct. The suprarenal capsules are enlarged, cut with increased resistance, and show increase of fibrous tissue. The urinary bladder contains about 75 c. c. of turbid urine, and is otherwise normal. The organs of generation are normal. The rectum contains a moderate amount of solid fecal matter. The duodenum, stomach, and gall ducts are normal. The liver weighs 1,235 grams. The external surface is smooth and uniform in color. It cuts with some increase in resistance, showing a yellowish surface with increase of fibrous tissue and areas of fatty change. The gall bladder contains a moderate amount of viscid bile. The pancreas weighs 80 grams, and is normal on section. The solar plexus is normal. The mesentery is dark in color and much congested. Meckel's diverticulum is present about two feet above the termination of the ileum. It is a blind pouch about three inches long. At its junction with the gut the lumen is about equal to that of the latter, but it expands somewhat toward the blind extremity. It has no mesentery of its own, and its contents are the same as those of the ileum, with which it communicates. The vermiform appendix is short, has a mesentery of its own, and appears normal. The small intestines contain liquid fecal matter, and the large intestines semisolid material. The great vessels are normal.

ANATOMICAL DIAGNOSIS.—Inequality of pupils; scoliosis; hemorrhage and softening of left internal capsule and optic thalamus; atheroma of left middle cerebral artery; congestion of true vocal cords; ossification of costal cartilages of first ribs; emphysema of right lung anteriorly, and edema posteriorly; healed scar and calcareous nodule of right upper lobe; partial adhesion of lower lobe and diaphragm; chronic tuberculosis and obliterative pleuritis, with contraction of left lung; adhesion of left lung and pericardium; chronic myocarditis; hypertrophy of left ventricle; chronic phrenitis; atrophy and fibrosis of spleen; chronic interstitial nephritis; sclerosis of suprarenal capsules; cirrhosis and fatty degeneration of liver; congestion of mesentery; the presence of Meckel's diverticulum.

C. R.
W. G. S.

IX.

F. D.; age, 29; nativity, Maine; admitted to the United States Marine Hospital, Boston, Mass., January 9, 1903; died February 2, 1903.

PREVIOUS HISTORY.—Had usual diseases of childhood, but has always in adult life been a healthy man.

PRESENT HISTORY.—Has had hernia for seven or eight years. He has worn a truss almost continuously.

EXAMINATION.—Heart and lungs normal. Abdomen normal. In right groin has large oblique inguinal hernia. Left groin presents a small oblique inguinal hernia.

On January 11, 1903, ether was administered and patient, having been properly prepared, was operated upon, a Bassini's operation being performed on the left side and a Kocher's on the right. Before the operation the temperature was normal and patient showed no sign of any disease nor did he give any such history. After the operation patient did not seem to do well and his temperature rose to a considerable height. He had no chills or sweats, and an examination of the lungs revealed nothing of note. His eyes became sunken and extreme emaciation made its appearance. Patient became weaker and his temperature was so high and showed such marked remissions that at first an infection of the wound was suspected. This, however, was not found to be so on dressing the wound. Typhoid fever being suspected blood tests were made for the Widal reaction, but with negative results. Tuberculosis was suspected and several examinations of the sputum were made, but without finding the bacilli. Before his death an exploratory search for any trouble in the wound was made, but nothing was found to account for the patient's symptoms. He died very suddenly on February 2, 1903. During the latter part of his sickness stimulants were employed.

NECROPSY (4 hours after death).—Rigor mortis absent. The right rectus muscle in the lower 3 inches showed signs of intestinal hemorrhages, the same as found at the exploratory laparotomy. The left pleural cavity contained 150 c. c. of fluid, the right 75 c. c. The pericardium contained 25 c. c. of

clear fluid. Slight adhesions were found at apex of left lung. This lung weighed 375 grams. Three-fifths of the right lung and the apex of the left lung showed innumerable miliary tubercles. The right lung weighed 810 grams. The heart weighed 285 grams. The right heart contained one very small ante-mortem clot. The left ventricle contained a similar clot. The heart was extremely flabby. The auricles were normal. The tricuspid orifice admitted four fingers. The other valves were normal. The liver was slightly congested. It weighed 1,680 grams. The spleen weighed 220 grams and was normal. The pancreas was also normal, and weighed 90 grams. The kidneys, except for slight congestion, were normal. Each kidney weighed 250 grams. Bladder was normal and contained 20 c. c. of urine. The lower portion of the ileum showed marked injection. The mesenteric glands were slightly enlarged. There was interstitial hemorrhage into the right iliac muscle. The brain was normal and weighed 1,880 grams.

CAUSE OF DEATH.—Tubercle of lung, miliary.

F. A. A.
W. C. R.
R. M. W.

X.

T. M.; age, 56; nativity, New Jersey; color, white; admitted to the United States Marine Hospital, San Francisco, Cal., October 31, 1903; died November 22, 1903.

HISTORY.—Family history negative. Personal history of rheumatism and vesicular emphysema. Transferred from marine hospital at Port Townsend, Wash., to this hospital for his present disease, which began as near as the patient can tell about ten months ago. Has had constant cough, expectoration, fever, loss of weight, night sweats, and dyspnea ever since, and has been growing steadily worse. Received in very bad condition. Both lungs give out numerous moist, crackling, and bubbling râles all over. He is very weak and suffers from dyspnea. Became rapidly worse and was delirious at night. Expectored tubercle bacilli and had more or less diarrhea. Cheyne-Stokes respiration began to develop November 18. Death occurred November 22, 1903, at 1.30 a. m.

NECROPSY (9 hours after death).—Body emaciated. Rigor mortis and post-mortem lividity marked. Brain: The calvarium removed. On removing the dura mater the pia mater is seen to be somewhat distended with clear serous fluid. Along the superior longitudinal sinus and in the sulci between the convolutions there are signs of acute plastic inflammation. The number of convolutions is exceedingly small. On section the brain is seen to be very pale, and the ventricles contain considerable clear serous fluid. The cerebellum and the structures of the base of the brain are normal. The weight of the brain is 1,070 grams. Thorax: The costal cartilages are largely ossified. The anterior mediastinum contains a moderate amount of fat. The right lung extends across the median line and the left lung is retracted. The left lung is adherent to the costal cartilages. The right lung is firmly adherent about the apex and posteriorly and to the diaphragm, and on removing the lung a portion of the parietal pleura is torn off with it. It weighs 980 grams. The upper lobe is one solid mass of caseous material, and the middle lobe is nearly as bad, though there is a small amount of tissue that crepitates. The lower lobe contains large caseous masses centrally and miliary tubercles elsewhere; there is crepitation in a portion of this lobe, and the section is very bloody and frothy. The external appearance of the lung is mottled bluish red and uneven. The left is so strongly bound to the chest wall that it can not be removed except in sections, and it is therefore examined in situ. The upper lobe and upper portion of the lower are in similar condition to that of the right upper lobes; there is crepitation in a small part of the lower lobe, and the section is bloody and frothy. The heart weighs 285 grams. Its outer surface is covered with considerable fat. The pericardium is surrounded by an amount of fat, and its cavity contains a small amount of serous fluid; it is strongly adherent to the left lung. The heart cuts with increased resistance; its muscular tissue is pale in color and shows excess of interstitial tissue. The right auricle contains a large, nonadherent, mixed clot. The aorta and pulmonary artery contain goose-fat clots. The aortic and pulmonary valves are competent to the water test, and the mitral and tricuspid valves are normal. The great vessels and nerve trunks are apparently normal. The diaphragm reaches to the fifth rib on the

right side and to the sixth on the left; it is adherent to the bases of both lungs by fibrous bands. Abdomen: There is a large amount of subcutaneous fat considering the general emaciation externally. The subperitoneal fat is also prominent. The great omentum is retracted to the left and contains considerable fat; it is free all over. The peritoneum is everywhere smooth and shining, and the intestines move freely. The spleen weighs 300 grams and is enlarged. It is strongly adherent posteriorly, wrinkles easily, is soft in consistence, and pale bluish red in color, with lighter areas. It cuts with diminished resistance, the pulp is very soft and prominent, and there appears to be slight proliferation of interstitial tissue. The external surface is smooth. The left kidney is surrounded with a large amount of fat and weighs 125 grams. It is smooth externally, and the fibrous capsule strips readily, showing hemorrhagic areas along the convex border. It cuts with increased resistance, showing a pale surface with yellowish striations. The cortical markings are fairly distinct, and the pyramids are pale in color. The right kidney weighs 105 grams and is similar to the left as regards surrounding fat and general condition, but beneath the capsule occurs a small yellowish nodule of pin-head size. The left suprarenal capsule is deeply embedded in the surrounding fat and is enlarged and bloody on section. The same conditions are present in the right suprarenal capsule. The urinary bladder is encompassed by a quantity of fat. It contains about 100 c. c. of cloudy urine. The mucous membrane is normal. The prostate, seminal vesicles, testicles, and penis are normal. The urethra contains a slight, permeable stricture in the prostatic portion. The rectum contains a small amount of soft fecal matter. The first portion of the duodenum shows considerable congestion of the mucous membrane. The stomach is slightly distended with gas and contains a small amount of liquid material. The mucous membrane is mottled and shows hemorrhagic areas. The gall ducts are patent. The gall bladder is moderately distended with fluid bile. The liver weighs 1,615 grams. The external surface is smooth, pale yellowish, and mottled with numerous minute reddish points. On section it is soft and friable, and the cut surface is very pale. The centers of the lobules are dark and prominent. The pancreas is surrounded by fat; it weighs 65 grams and is negative on examination. The solar plexus is normal. The mesentery contains a large amount of fat. In the wall of the ileum, about 6 inches from the cæcum, occurs a large transverse ulceration eroding the mucous membrane. The large intestines, the great vessels, and the vermiform appendix are apparently normal.

ANATOMICAL DIAGNOSIS.—Acute leptomeningitis; ossification of costal cartilages; chronic bilateral pulmonary tuberculosis and pleuritis; chronic myocarditis; chronic phrenitis; excessive adipose formation about abdominal viscera; subacute splenitis; chronic interstitial nephritis; stricture of urethra; chronic gastritis; tubercle of suprarenal capsules; fatty degeneration of liver; tubercular ulceration of ileum.

C. R.
W. G. S.

XI.

A. D. M.; age, 43; nativity, New York; color, white. Admitted to United States Marine-Hospital Sanatorium, Fort Stanton, N. Mex., July 20, 1903, and died August 8, 1903.

HISTORY.—Had typhoid fever twenty-one years ago. Has Bright's disease, and a severe cough for five years, dating from an attack of la grippe; has lost in weight, and has had pain in chest, and night sweats for two years; is weak and dyspnoeic on slight exertion; has suffered from hemoptysis on several occasions.

NECROPSY (7 hours after death).—Body that of a fairly well-nourished man of medium build, skin slightly inelastic and of a sallow color, abdomen and chest hairy. Upon section of the abdominal wall the panniculus was found fairly abundant, but the muscles poorly developed. Omentum was fairly rich in fat, but pale. Upon removal of the sternum and costal cartilages the anterior mediastinum was found normal. The larynx and trachea were apparently normal. Left lung adherent to thoracic wall at apex and inferior angle of scapula. Weight, 365 grams. Part of upper lobe contracted and indented; hard nodules could be felt in the tissue of the upper lobe, and smaller nodules, size of pea and smaller, felt in tissue of lower lobe. On section the upper lobe was found to contain a cavity the size of a walnut beneath the contracted area previously described. Both lobes contained tubercles scattered throughout. Right lung:

Weight, 340 grams, not adherent to thoracic wall; tubercles varying in size from a millet seed to a pea were scattered throughout the lung. Right ventricle slightly dilated, walls of ventricle slightly atrophic; weight, 385 grams; the pericardial sac contained 25 c. c. of a clear serous fluid. Liver extended to costal margin in right nipple line. Glisson's capsule was adherent by fresh, easily torn adhesions to the parietal peritoneum and to the diaphragm. Weight of liver, 2,105 grams. Surface of liver was rough, with a very slight hobnail appearance. Glisson's capsule was thickened and contracted in areas. The whole organ was enlarged and of firm consistency. Gall bladder filled with yellowish-green bile; cystic duct patent. Spleen weighs 425 grams, was enlarged, and had four distinct notches; cuts like cheese and was pale and anæmic. The follicles were easily seen, and constituted the greater part of the cut surface. Left kidney: Weight, 490 grams; fatty capsule small in amount; stellate veins injected; fibrous capsule contracted and adherent in areas; between the injected stellate veins the cortex is very pale. On section the kidney is very pale, of a yellowish-white color, and cuts with resistance. The cortex seems devoid of blood and the pyramids are few and scattered. The glomeruli are few, scattered, and hard to make out. The kidney measured $7\frac{1}{4}$ inches long, 4 inches wide, and $2\frac{1}{2}$ inches thick, with cortex from three-eighths to one-half inch thick. Right kidney was smaller than left, cortex thicker, and the pyramids fewer, but similar in all other respects. Weight, 400 grams. Bladder was small and contracted down to size of golf ball. The walls were thick and the mucous membrane pale. Prostate apparently normal. Testes soft, but otherwise apparently normal. Stomach was empty and the walls covered with a greenish, thick, tenacious mucus. Pylorus was patent. Duodenum contained considerable dark-green tenacious mucus. Its walls were stained green and brown, and showed passive congestion. Jejunum showed condition similar to duodenum. The ileum contained some feces. Entire intestines showed passive congestion.

MICROSCOPICAL EXAMINATION.—Lung tissue contained typical tubercles with necrotic centers, epithelioid, and giant cells. Blood vessels dilated with blood and the pulmonary connective tissue, especially the interalveolar, was much increased. Many of the alveoli were filled with debris which stains faintly, red blood cells, and a few leucocytes. Anthracosis throughout in moderate amount; pleurae were thickened and congested; alveoli, where not involved, were much distended. Interstitial connective tissue of the kidney was much increased throughout. In cortex there were many obliterated glomeruli, some small cell infiltration, the convoluted tubules were distended and filled with plugs of hyaline and fat droplets. The epithelium was flattened and showed cloudy swelling. In pyramids straight tubules were filled with hyaline plugs. The glomeruli which were not entirely obliterated showed hyaline deposits. There was arterio-sclerosis of blood vessels.

PATHOLOGICAL DIAGNOSIS.—Tuberculosis of the lungs; chronic adhesive pleuritis; dilation of right heart; old adhesive peritonitis; chronic parenchymatous nephritis; passive congestion of intestine.

J. W. T.
P. M. C.

XII.

J. M. M.; age, 42 years; nativity, New York; color, white; was admitted to the United States Marine Hospital Sanatorium, Fort Stanton, N. Mex., March 2, 1902, having been transferred from Baltimore. His history and examination, made at Baltimore, showed the following:

His family history was negative as regards tuberculosis. His statement as to his personal history was that he had always enjoyed good health, that he had had gonorrhœa, that one year ago he was shipwrecked, and subsequently began to cough, have night sweats, anorexia, and loss of weight.

Examination showed increased tactile fremitus and dullness on percussion over both apices and hyporesonance over remainder of both lungs. Numerous râles were heard over entire chest. Tubercle bacilli were found in his sputum. His weight was 133 pounds. While at Baltimore he had several attacks of hemoptysis.

Examination upon admission to Fort Stanton revealed the following: Chest expansion equal on both sides, vocal fremitus negative, abdomen tender on right side, liver palpable below right costal margin, hard and tender, diminished resonance in both apices, dullness in left base, tenderness on deep percussion in left

axillary region, crackling râles heard at base of right lung laterally, left lung contained crackling râles from apex to base, bronchial breathing in left apex, heart extended to the left of the left nipple line, cardiac sounds seemed normal. Albumen, hyaline, and fatty casts were present in urine.

After arrival he had repeated attacks of hemoptysis, occasional diarrhoea, increased dyspnoea. During latter part of May had several convulsions, was restless, with coma at intervals. Died May 31, 1902, at 7.25 p. m.

NECROPSY.—Body emaciated, abdomen distended; petechiae on anterior surfaces of arms, legs, and chest; rigor mortis and post-mortem lividity present. Brain: The external dura mater is strongly congested, and there is a slight subdural layer of fibrinous blood; the base of the brain is bathed in clear serous fluid; the meningeal arteries and the circle of Willis are strongly congested; the lateral ventricles contain clear, straw-colored fluid; the condition is that of typical "wet brain." Thorax: Ossification of the sixth costal cartilage on the left side; same of cartilages of first ribs. The lungs do not meet in the median line. The pericardium contains a small amount of clear straw-colored fluid. The visceral layer of the pericardium shows "soldier spots." The heart is small, flabby, and contains no blood; it exhibits the ordinary amount of superficial fat. The aortic and pulmonary valves are competent to the water test. The mitral orifice admits three finger tips loosely; the tricuspid admits four loosely. The left heart is slightly enlarged, the myocardium being increased. The right heart is normal. The myocardium of the interventricular septum is dark brown in color; increase of connective tissue around the coronary arteries and beginning of the aorta, though the endocardium of the latter is smooth and shining. Both pleural cavities are obliterated by firm adhesions. The right lung shows a considerable infiltration in the upper lobe; the lower lobes also show infiltrated areas, though comparatively free. The left lung is solidly infiltrated in the upper lobe; the lower lobe has areas of consolidation posteriorly and laterally, the most of the lobe crepitating, however. The great vessels and nerve trunks are normal. The diaphragm on the right side extends to the upper border of the fifth rib; on the left side it extends to the fourth interspace. Abdomen: A small amount of subcutaneous fat. The peritoneal cavity contains a large amount of clear, straw-colored fluid. The folds of the lesser peritoneal cavity are small and thickened. The omentum is retracted and adherent to the large intestine, liver, and gall bladder. The spleen is adherent posteriorly and inferiorly. It is about six times the normal size and cuts with slightly increased resistance. The external surface shows several elevated, light-colored, nodular excrescences, which in the section appear on the surfaces and are nearly cartilaginous in consistency. These areas in the spleen are irregularly distributed and not very well defined in outline. There is some increase of fibrous tissue in places. The kidneys are surrounded by much perinephritic fat, are large and pale, cut with slightly increased resistance, and show congestion of the stellate veins. The fibrous capsule strips readily. Beneath the capsular surface are numbers of small, nodular, yellowish, hardened, pea-sized bodies, which also occur in the cortex and medulla. The cortex is swollen and the glomeruli not prominent. The cortical markings show fatty change. The suprarenal capsules exhibit the same nodular formation as do the kidneys. The urinary bladder is normal. The right testicle is enlarged and contains nodules of large pea size, which show gummatous formation with liquefaction in the center in some nodules; these occur in the testicular substance proper. The other organs of generation appear normal. The rectum, duodenum, and stomach are normal. The gall ducts are patent. The gall bladder is nearly obliterated and bound firmly by adhesions to the border of the liver and omentum. The right lobe of the liver is adherent to the hepatic flexure of the colon and omentum and also to the diaphragm. The liver itself is enlarged and hardened, holds its shape rigidly on the flat surface, roughened externally. There are numerous divisionary segments to the lobus Spigelii and adhesions between the liver and inferior vena cava. A strong band of adhesions extends from between the lobes over the round ligament. In addition the surface of the liver wrinkles with difficulty and is of a mottled brownish-gray color. It shows many elevated and light-colored nodules of pea size over the entire surface. The consistency of these is hard, and they extend downward into the liver substance. The liver cuts with much increase of resistance, and the cut surface is roughened and uneven and shows considerable excess of fibrous tissue, principally around the portal spaces. The nodular bodies are uniformly distributed internally. The pancreas shows nodular formation similar to

that in the liver and the other organs. The solar plexus appears to be normal. The mesenteric lymph glands are enlarged, hardened, and caseous. The vermiform appendix is small and normal. In the small intestines on the external border of the ileum occur transverse areas of congestion, which on section are seen to involve the mucosa, and are ulcerative in character. The large intestines and the great vessels are normal.

ANATOMICAL DIAGNOSIS.—Right ischial decubitus; congestion of meninges of brain; tricuspid insufficiency (slight); hypertrophy of left ventricle (slight); incipient arterio sclerosis of coronary arteries and commencement of aorta; chronic fibrous pleuritis; chronic pulmonary tuberculosis; chronic peritonitis; fibrous adhesion between liver, colon, gall bladder, and omentum; gummata of parenchymatous abdominal organs; enlargement and fibrosis of spleen; chronic parenchymatous nephritis; gummata of right testicle; contraction of gall bladder; hypertrophic cirrhosis of liver; tubercular adenitis and ulceration of small intestine.

H. K. P.
P. M. C.

XIII.

C. R.; aged 42 years; nativity, England; color, white; was admitted to United States Marine Hospital Sanatorium, Fort Stanton, N. Mex., January 25, 1902, and died April 5, 1903.

HISTORY.—Had been in hospital at Honolulu with enlarged cervical glands in July, 1901. December 28, 1901, he was admitted to the United States Marine Hospital at San Francisco, complaining of dyspnea, cough, expectoration of frothy sputum, pain in chest after coughing, and gradual loss in weight. Examination revealed a hard circumscribed tumor over the upper part of the sternum. It had grown gradually and was occasionally painful. Arrived at Fort Stanton January 25, 1902, where examination revealed enlarged cervical axillary, and epitroclear lymph glands, and a small, hard, nonfluctuating tumor at seat of left sterno-clavicular articulation. The tumor was not adherent to the skin and was of bony consistency. Upon auscultation râles were heard in the form of small moist clicks over right lung from apex to fourth intercostal space anteriorly and in the interscapular space and base posteriorly. In the left lung bronchial breathing was well marked from clavicle to fourth rib in front, with a few moist clicks in the extreme apex and base. Examination of sputum was negative. The urine gave a marked diazo reaction. For the next three months he had a chill, followed by a run of fever about every second week. The temperature would mount higher and higher each evening until it reached 40° C., then it would fall lower and lower each morning until it reached 35° or 34° C. It would thus remain subnormal for a week or two, being as a rule about 35° C. in the morning and 36° C. in the evening. Examination of blood showed a great increase in the number of the polymorphonuclears. In April he began to complain of pain and tenderness in the abdomen. By July cough and expectoration were much diminished. The febrile attacks had ceased and the patient gained 8 pounds in weight. In August the febrile attacks returned. In January, 1903, pains became more continuous and troublesome over the abdomen and a severe diarrhœa with foul-smelling watery stools set in. Liver was enlarged and tender on pressure. Died of exhaustion April 5, 1903.

NECROPSY (3½ hours after death).—Skin bronzed yellow, dry, and inelastic. Emaciation extreme. Some hypostasis over back. Excoriations upon legs and abdomen. White atrophic scars about knees. Cervical, axillary, and inguinal glands were all enlarged. Right thorax more prominent than left. Abdominal walls very thin. Upon section abdomen contained a liter of clear greenish fluid; omentum poor in fat; cœcum had small areas whitish in color. Surface of liver was studded with small white pin-head areas, some of which have a darker central dot. Upon removing the sternum there was found a tumor on the under surface of the manubrium about the size of a hen's egg and of the consistency of fibrous tissue. On section it was yellow with brownish areas. This tumor formed a part of the manubrium and was clearly an outgrowth from it. It was also adherent to the left lung. The retroperitoneal and mesenteric glands were all enlarged, some to the size of hen's eggs and upon section showed the same structure as did the tumor just mentioned. The left lung was adherent to the pericardium, to the thoracic wall in the neighborhood of the tumor, and to the tumor itself. All the mediastinal glands were enlarged and on section showed an appearance similar to that of the

mesenteric glands. Throughout the left lung were hard nodules, varying in size from a millet seed to a Lima bean. One large nodule was excavated and contained a purulent fluid in the center. Lung contained air throughout. The nodules were firm and had the appearance of connective tissue. The right lung was adherent slightly at the apex. On section a few nodules similar to those found on the left were seen in the apex. No sign of tuberculous involvement in either lung. Heart apparently normal. Kidneys: Fibrous capsule easily stripped; in cortex were seen small pin-head nodules of firm consistency and yellow color. Adrenals contained a few pin-point whitish areas. Spleen was large and friable and filled with nodules the size of peas throughout. The follicles were visible, and the connective tissue was increased. Liver was firm. The lobules were indistinct and throughout were yellowish nodules varying in size from a pin-point to a French pea. Pancreas was normal. Examination of bladder, prostate, penis, and testicles was negative. Small intestines were pale, thin as tissue paper and transparent. One yellowish nodule was found in the ileum.

MICROSCOPICAL EXAMINATION.—Primary tumor was a small spindle cell fibro-myxosarcoma. Secondary tumors were found in lung, lymph glands, and spleen. Liver showed great increase in the intralobular connective tissue, showed some small cell infiltration and contained many millary tubercles. Spleen was congested and contained secondary sarcomata and millary tubercles. Kidney congested, connective tissue increased, some cloudy swelling, a few obliterated glomeruli. Small abscess in cortex.

PATHOLOGICAL DIAGNOSIS.—Small spindle cell fibro-myxosarcoma. The primary tumor was located in the anterior mediastinum and was firmly attached to and grew from the inner surface of the manubrium. Secondary tumors were found in the lung, spleen, and cervical, supra and infra clavicular, axillary, mesenteric, and retroperitoneal lymph glands; atrophic cirrhosis of liver; millary tuberculosis of liver and spleen; metastatic abscess in kidney; chronic congestion of kidney; chronic fibrous pleuritis, and pericarditis.

J. W. T.
P. M. C.

XIV.

E. G.; age, 21; nativity, Norway; color, white; admitted to United States Marine Hospital Sanatorium, Fort Stanton, N. Mex., December 16, 1902, giving a history of pulmonary tuberculosis dating back four years. Tubercle bacilli were found in his sputum and physical examination showed advanced disease in both lungs. Hemoglobin percentage was between 70 and 80, as estimated by Tallquist's method; died September 18, 1903.

NECROPSY (7½ hours after death).—The findings were as follows: Hypostasis over back of neck, trunk, and thighs; blue discoloration over left inguinal region; skin of abdomen mottled with patches of yellow (*Tinea Versicolor*); skin dry, inelastic, and yellowish in color; nutrition, poor; panniculus, small; no scars, no deformities; rigor mortis present; body heat, mere trace. Brain: Dura was congested and contained bluish, roughened areas varying in size from a pea to a nickel, along each side of longitudinal sinus in usual region of pachionian bodies. The pia was also congested; likewise the choroid plexus and the cerebral vessels in each hemisphere. Examination of the larynx was entirely negative. Pericardium contained 40 c. c. of clear serous fluid. Heart weighed 350 grams and was apparently normal. Right lung adherent to thoracic wall from apex to base by strong adhesions; weight, 610 grams. Upper lobe was contracted and contained many small cavities. The lower lobe contained many tubercles scattered throughout. Left lung weighed 470 grams, had small cavity in apex; upper half of upper lobe was consolidated; many millary tubercles were scattered throughout rest of lung. Omentum normal. Appendix adherent and club shaped. Liver weighed 1,855 grams, and was slightly congested. Spleen weighed 380 grams, and was enlarged, of firm consistency, and the follicles could be easily seen. Left kidney weighed 220 grams, and was congested; glomeruli were visible as small pin-point dots in cortex. Fibrous capsule stripped easily. Stellate veins were congested. Right kidney weighed 200 grams and was in all respects similar to the left. Pancreas, stomach, urinary bladder, prostate, and testes were normal. Intestines contained small, shallow ulcers.

MICROSCOPICAL EXAMINATION.—Lungs contained typical tubercles, with giant and epithelioid cells and necrotic centers. Brain contained a few small tubercles, containing giant and epithelioid cells. Vessels showed moderate congestion.

Pia contained a few small tubercles with epitheloid and giant cells and necrotic areas. Spleen showed moderate congestion, increased connective tissue, many small tubercles, and arterio-sclerosis. Kidneys showed moderate congestion, a few obliterated glomeruli, small miliary tubercles scattered throughout cortex and medulla, slight increase of connective tissue, and some cloudy swelling in convoluted tubules. Intestines showed congestion and ulceration extending to submucosa.

PATHOLOGICAL DIAGNOSIS.—Tinea versicolor over abdomen; chronic adhesive pleuritis; chronic tuberculosis of lungs; acute miliary tuberculosis of brain and its membranes and of the spleen and kidneys; ulceration and congestion of intestines.

J. W. T.
P. M. C.

XV.

H. C. W.; age, 41; male; nativity, Ohio; color, white; was admitted to the United States Marine Hospital Sanatorium, Fort Stanton, N. Mex., July 17, 1903, giving a clear history of pulmonary tuberculosis. Examination revealed the disease to be in an advanced stage. After arrival his temperature ranged from 38° C. to 41° C. and he had an annoying diarrhoea. His spleen was enlarged and his urine gave Ehrlich's diazo reaction. He died July 28, 1903.

NECROPSY (23 hours after death).—Hair scant; beard thin; skin of face sallow; body emaciated; back of trunk, arms, and legs covered with hypostatic areas; body heat absent; rigor mortis present; vaccination scar at insertion of left deltoid; copper-colored atrophic scars over anterior aspects of both tibiae; scar 1½ inches long to left of and beneath left eye; abdomen distended and tympanitic, panniculus very scant. Upon section of the abdominal wall the intestines protruded and were distended with gas; abdomen contained some serous fluid. Muscles of abdomen pale. Upon removal of the sternum the veins of the anterior mediastinum were found congested. Pericardium normal. Heart weighed 240 grams; myocardium was pale, flabby, and atrophied; right ventricle dilated; subpericardial fat slightly increased; slight sclerosis in commencement of ascending limb of arch of aorta. Left lung was adherent to thoracic wall at apex; studded throughout with tubercles and consolidated nodules; had many small cavities in apex; base showed marked hypostatic congestion. Weight of lung, 1,150 grams. Right lung was not adherent; was filled with tubercles and consolidated nodules throughout; contained several small cavities in the lower lobe. Weight of lung, 1,775 grams. The peribronchial lymph glands were enlarged and one of the glands close to the right bronchus was completely calcified. The lymph glands around the oesophagus and thoracic aorta were also enlarged. Kidneys: Fatty capsules of both kidneys were scant, the fibrous capsules adherent, and the parenchyma pale; weight of right kidney 160 grams; of left, 170 grams. Liver weighed 1,540 grams; was very pale and of normal consistency. Spleen weighed 400 grams; was much congested, connective tissue was increased, parenchyma was friable, and the follicles were easily seen. Pancreas was soft and showed passive congestion. Urinary bladder was filled with clear amber urine; the walls were atrophic. Prostate normal in size, but flabby. Intestines contained undigested milk. In the ileum and caecum were found ulcers scattered at irregular distances. They varied in size from a pin head to a dime. They had depressed centers and raised edges, and in the caecum penetrated to the muscularis mucosae. They were pale, excepting in the lower ileum, where they were congested. Stomach contained considerable undigested milk. The mesenteric and retroperitoneal lymph glands were not enlarged.

PATHOLOGICAL DIAGNOSIS.—Dilation of right heart; slight arterio sclerosis; chronic adhesive pleuritis; chronic pulmonary tuberculosis; lymphadenitis of thoracic glands; chronic nephritis; chronic congestion of spleen; chronic ulcerative enterocolitis (tuberculous).

J. W. T.
P. M. C.

XVI.

W. W.; age, 24 years; nativity, Tennessee; was admitted to the United States Marine Hospital, St. Louis, Mo., July 30 and died August 17, 1903.

HISTORY.—Patient was admitted to the hospital on account of an oedema of the ankles and face, with cough and shortness of breath. The urine on exami-

nation was small in amount and contained considerable albumen and granular casts. There was profuse expectoration of mucopurulent sputum.

NECROPSY (4 hours after death).—Body that of a young adult negro; rigor mortis present in lower limbs and œdema of the face and eyelids; muscles poorly developed and subcutaneous fat small in amount. Pericardium normal; contained a very small amount of fluid. Heart is hypertrophied, weight 310 grams; both auricles filled with white clot; valves normal. Right lung slightly adherent at the base posteriorly; weight, 670 grams. On section the upper lobe contained cavity filled with pus, which was about the size of a hickory nut. The middle and lower lobes contained a number of calcified areas. Left lung is adherent throughout; weight, 1,050 grams. The surface is covered with large number of millary tubercles; on section there is found a large cavity filled with pus which is of the size of a hen's egg. The lower lobe also contains a few small pus cavities. Liver: Weight, 1,830 grams; surface is studded with small tubercular nodules. Spleen weighs 220 grams, found to be normal. Mesenteric lymph glands are much enlarged. Stomach is found to be empty and the mucosa of normal appearance. Small and large intestines are normal. Appendix 17½ cm. in length; lumen of the appendix is open. Right kidney: Weight, 130 grams; smaller than normal; capsule is adherent; surface of the kidney nodular; cut section shows small pelvis; cut surface is pale. Left kidney: Weight, 100 grams; capsule is adherent, otherwise same as right kidney. Bladder contains small amount of urine mixed with pus; the mucosa is pale and slightly thickened. Urethra is pervious.

H. C. W.

A. D. F.

XVII.

J. C.; age, 20; nativity, Chile; color, white; admitted to the United States Marine Hospital, San Francisco, Cal. April 23, 1903; died July 21, 1903.

HISTORY.—Previous personal and family history negative.

PRESENT HISTORY.—For ten days he has not felt well, and very bad for the last four days; has pain in back and belly and in head; he had a chill and sweat yesterday; bowels regular, appetite poor, sleeps very poorly; has coughed for eleven days and raised a good deal.

Examination shows coated tongue, diminished expansion of left chest with increased vocal fremitus to fourth rib, and dullness over whole of left side; flatness laterally; absence of respiratory murmur laterally and below, and small mucous râles throughout upper lobe. Heart action rapid, with heavy beats.

May 2.—Is about the same, coughs very badly, eats and sleeps fairly well, bowels very loose, sweats profusely all the time and temperature remains high.

May 11.—Somewhat better, though the temperature continues above the normal; the appetite is slightly improved.

May 22.—Examination shows bulging in left axilla and hypochondrium, and dyspnea, almost amounting to orthopnea; increased vocal fremitus in right supraclavicular region, diminished in left base; slight loss of resonance in apices and infraclavicular regions, and also in supraclavicular regions on right side; over left side dullness (absolute) from third interspace up and into axilla; dullness from eighth rib downward on the left side; cardiac dullness extending about three cm. to the right; liver dullness about two fingers' breadth below costal margin; bronchophony in right supra and inter scapular regions; bronchial breathing on right side posteriorly; harsh breathing all over rest of chest except in a few places. Heart: Diffuse pulsation in epigastrium and right hypochondrium.

May 26.—Physical examination: Movements of left chest slightly limited, left chest bulging below; vocal fremitus absent over lower half of left chest posteriorly and diminished over same anteriorly and in extreme right base; tone of entire left lung higher than that of right, and dullness above posteriorly, with flatness below; liver dullness increased below and liver is tender; crackling râles in right apex, but of a rather dry character and mostly inspiratory; right respiratory murmur generally exaggerated, except in base, where occur dry râles on inspiration and expiration; in the left lung many large, moist, crackling râles in the upper half, which become metallic at the level of the nipple and fewer in number, the character of the sound being that of "metallic tinkling;" absence of râles and breath sounds over lower fourth of left lung; splashing sounds elicited when succussion is employed; bronchial breathing between nipple and left axilla.

May 27.—Aspiration performed at left lateral border of chest in the eighth interspace, and about 400 c. c. of yellowish pus removed, air bubbles being mixed with the pus.

May 30.—Pain in left chest about first and second ribs since operation, though breathing is much easier; expectoration has almost ceased; bowels regular, appetite fair, sleep interrupted.

June 1.—An attempt made to do a thoracotomy. Found unable to give a general anæsthetic, as patient was plunged into violent fits of coughing at each attempt at a recumbent posture.

June 2.—Under spinal anæsthesia by means of cocaine the thorax was opened in the intercostal spaces, one opening anteriorly and the other posteriorly, both being then connected by a large double drainage tube. About 1,500 c. c. of greenish, bad-smelling pus evacuated. Great relief experienced by the patient, and cough and expectoration ceased.

June 5.—Condition much improved, no cough; a large amount of pus drains out daily.

June 12.—Condition generally about the same; there is a lessened discharge of pus.

June 22.—Feels about the same. Considerable pus still discharges. Seems thinner and more cachectic than formerly.

June 26.—Continues to be bright and maintains a good appetite, notwithstanding the fact that there is a free discharge of pus daily and that he is growing more wasted every day.

July 3.—Not much improvement; has an enormous appetite and more or less digestive disturbance.

July 10.—Digestive system causing no further trouble. Patient still maintains a ravenous appetite. General condition about as usual.

July 17.—No improvement; still maintains a hectic temperature; very much emaciated; a free discharge of pus.

July 21.—Estlander's operation performed. Anæsthetic, chloroform. Later changed to ether. During the operation strychnine sulphate, one-tenth grain, given in divided doses; also ether, 60 m.; brandy, 240 m., and 480 c. c. of normal saline solution hypodermatically. Oxygen given for ten minutes. The patient survived the profound shock of the operation, and when returned to bed was given an enema of coffee, whisky, and water at 37° C. Later was resting easily and partially returned to consciousness; died at 1.15 p. m.

NECROPSY (4 hours after death).—Body emaciated. A profuse scaly eruption on the dorsum of the penis, the scales being dirty gray in color, coarse, and strongly adherent to the underlying skin (this had been present for more than a month). Chilean flag tattooed on left forearm. On the left side of the chest an operation wound extending from the seventh to the ninth rib, inclusive, and entering the left pleural cavity. A portion of each of the ribs resected. Brain: Weight, 1,410 grams. The veins of the pia mater are engorged. The structures at the base and the remainder of the brain do not show anything pathological. Thorax: In the anterior mediastinum the right lung is seen to extend beyond the median line. The heart is small and pale and weighs 200 grams. On section the tissue is pale brown in color, greasy to the touch, and shows areas of lighter color. No blood clots are present in the heart. All the valves appear to be normal. The pericardium is thickened and strongly adherent to the left lung. The bronchial and posterior mediastinal lymph glands are enlarged and hardened. The right lung is adherent to the pleura all over by separable fibrinous adhesions. The lung contains numerous small tubercles in the middle and lower lobes, and the apex is nearly solid. Section of the apex shows caseous masses and small cavities; very little functional tissue. The lower lobes, while containing many small tubercles, have also much functional tissue remaining. The left lung is shrunken to about the size of a man's closed fist. It adheres so strongly to the upper part of the pleural cavity that it can not be separated and removed. Section *in situ* shows the lung to be merely a mass of tuberculous material, no functional tissue remaining that can be seen. The pleura is greatly thickened and is coated with a prominent white pyogenic membrane. The great vessels, nerve trunks, and diaphragm are normal. Abdomen: About 3 inches above the umbilicus in the median line occurs a small abscess of bean size in the subcutaneous tissue. The peritoneum is white and somewhat thickened, and there is a considerable amount of serum in the peritoneal cavity. Inflammatory lymph is present on the peritoneal coat of the intestines. The omentum contains very little fat. The spleen is loosely adherent to the neighboring structures, is soft in consistency, and wrinkles easily; weight, 165

grams. Section shows prominence of the pulp and is quite bloody; there is some increase of interstitial connective tissue. The kidneys are large, soft, and very pallid in hue. The capsules strip readily. Section shows no increase in resistance, the cut surface being very pale and the pyramids faintly outlined. The cortex is made up of tissue of a light-yellow color, as is also the medulla. The right suprarenal capsule is yellowish in color, enlarged, and of doughy consistency; it cuts with increased resistance. Examination of the left suprarenal is negative. The urinary bladder contains a small amount of turbid urine. The organs of generation are normal, except the penis, which shows the eruption before described. The rectum and duodenum are normal. The stomach is distended with gas. The gall ducts are patent and the gall bladder contains viscid bile. The liver shows masses of inflammatory lymph on its convex border, also a semilunar depression. It weighs 1,220 grams. On section the cut surface is very bloody and when scraped off with a knife is seen to be of a light yellowish color. The centers of the lobules show darker than the periphery. The pancreas is very anæmic, the color being pale yellow. The solar plexus is normal. The small and large intestines are coated externally with inflammatory lymph and the small intestines show a number of transverse ulcerations. The great vessels are normal. Enlarged mesenteric lymph glands.

ANATOMICAL DIAGNOSIS.—Lichen ruber planus of penis; operative wound in left axilla from second to ninth ribs, inclusive, with resection of portion of each rib; engorgement of vessels of pia mater; emphysema of right lung; acute myocarditis with fatty infiltration; localized pericarditis; tubercular adenopathy; acute fibrinous pleuritis (right); pulmonary tuberculosis (bilateral); complete contraction of left lung; chronic pleuritis (left), oblitative above, with empyema below; abdominal, subcutaneous, bean-size abscess; chronic tubercular peritonitis; chronic splenitis; acute nephritis with fatty infiltration; chronic adenitis (right); acute hepatitis with fatty degeneration; fatty degeneration of the pancreas; tubercular ulceration of small intestines. Note.—Tubercle bacilli were never found in this case.

C. R.
W. G. S.

XVIII.

T. T.; age, 45; nativity, New York; color, white; admitted to the United States Marine Hospital Sanatorium, Fort Stanton, N. Mex., June 27, 1903; died July 10, 1903.

HISTORY.—His mother had died of some form of lung trouble. He gave a history of gonorrhœa, chancre, and syphilis, and claimed to have had a cough for fifteen years, but stated that it became much more severe six months ago, and that he was compelled at that time to give up work on account of weakness, loss in weight, cough, and dyspnoea. Upon arrival he was in a very weak condition; his pulse was 110 and his respiration 26 per minute; he was an anæmic and dyspnoeic. While at the sanatorium he remained in a semicomatose condition most of the time.

NECROPSY (4 hours after death).—Body heat present in small amount; rigor mortis absent; emaciation extreme; hair gray; chest hairy; hypostasis over back; upon section the abdominal walls were found to be thin; the panniculus very scant and the muscles pale. The liver extended from 1 inch in the anterior axillary line to 2½ inches in the parasternal line below the right costal margin. The abdomen was comparatively dry. The sternum was removed with ease, the costal cartilages being easily cut. Upon opening the pericardial sac, the visceral and parietal pericardia were found adherent over their entire extent by adhesions which were torn with comparative ease. The visceral pericardium was found much thickened, the heart muscle pale, the right ventricle filled with mixed clots, the left ventricle filled with currant-jelly clots. The ascending limb of the arch of the aorta was enlarged and bulged on its convex side. Its entire inner surface was covered with hard, glistening, brittle, bony plates, which extended as far as the end of the descending limb of the arch. All the valves were apparently normal. Both lungs were adherent to the thoracic wall over their entire surface. The left lung contained a cavity the size of a small apple in the apex. Elsewhere it was consolidated by closely crowded tubercles and infiltrated areas, except at the base, where there was a small amount of air-containing lung. The right lung contained a cavity the size of a large apple in the apex. Elsewhere it was consolidated, with but traces of

air-containing lung here and there. Spleen was pale and had an increase of connective tissue. Kidneys were pale and showed an increase of connective tissue. Liver showed passive congestion. The small intestines were contracted and of small caliber. There was an old fistula in ano. Pancreas, lymph glands, urinary bladder, prostate, seminal vesicles, penis, and testicles were normal. The brain was not removed.

J. W. T.

XIX.

T. M.; colored; age, 40; native of Ohio; unmarried; admitted to United States Marine Hospital, Cairo, Ill., August 29, 1903; died September 5, 1903.

FAMILY HISTORY.—Unknown to patient.

PREVIOUS HISTORY.—Has been sailing on vessels of the United States for about twenty-three years, usually employed as cabin boy. Health excellent until three years ago, when he had an attack of smallpox, from which, apparently, he made a good recovery. About a year later, however, he began to complain of an occasional hacking cough, which gradually became more persistent. At no time has he suffered from pain or much discomfort, but his general health gradually became impaired. Six months ago had two hemorrhages within a short interval, both occurring during a coughing spell. Two weeks ago hemoptysis again occurred and he applied at this office for out-door treatment. He was then advised to remain in hospital until the necessary steps were taken to transfer him to the marine hospital sanatorium, but he stated that it was impossible for him to do so at that time.

PRESENT HISTORY.—Patient somewhat emaciated; short in stature and weighs 120 pounds, having lost 15 pounds in the last six months; complaints of little or no pain; has a short, hacking, persistent cough, accompanied by abundant expectoration; sputum tenacious and blood tinged and full of tubercle bacilli.

PHYSICAL EXAMINATION.—On inspection diminished expansion of chest is noted, especially marked on left side, and accompanied with some flattening. Percussion reveals dullness over lower two-thirds of left lung. Over this area there is also prolongation of the expiratory murmur and numerous small sibilant and large moist râles. Signs of cavity are elicited in the mid-axillary line on the left side on a level with the fifth rib. The right and left apices also show signs of extensive infiltration.

While under treatment the symptoms above mentioned persisted. The sputum was constantly tinged with blood and severe hemorrhages occurred on three occasions. The last one was very profuse and proved fatal at 7 a. m., September 5.

NECROPSY (3½ hours after death).—The cadaver, that of a small-sized spare man, somewhat emaciated. There is some edema of legs; pupils dilated; scar in left inguinal region; nearly all teeth decayed; flattening of left thoracic region; rigor mortis not perceptible except in muscles of back of neck. On incision adipose tissue is seen to be scant; all the tissues are dry and bloodless; lungs pale gray and emphysematous; old pleural adhesions on both sides, especially about base and apex; a number of old cicatrices seen on lung surface; right lung weighs 405 grams; large cavity in apex, partly cicatrized; numerous tubercular nodules present. Left lung weighs 528 grams; it is completely infiltrated with tubercular products; in the lower lobe there is a large cavity filled with clotted blood, evidently the seat of the fatal hemorrhage. Pericardium normal. The sac contains about 15 c. c. of straw-colored serous fluid. Heart: Weight, 232 grams; walls fatty, pale, and bloodless; a few small currant-jelly clots in ventricles; tricuspid valve slightly thickened. All other valves normal. Liver: Weight, 1,518 grams; pale, and showing signs of fatty degeneration; capsule strips off easily; gall bladder normal and containing about 30 c. c. of rather dark-colored bile. Spleen: Weight, 231 grams; very friable, breaking up on removal. Kidneys normal; right weighs 181 grams, the left 188 grams. Stomach and intestines normal; bladder normal and containing about 100 c. c. of urine. Brain normal, weight 1,452 grams.

G. M. G.

XX.

R. D.; age, 57; nativity, Ireland; color, white; admitted to the United States Marine Hospital, San Francisco, Cal., April 4, 1904; died May 2, 1904.

HISTORY.—Family history negative; personal history of pneumonia in 1872, gonorrhœa twenty years ago, and cough for fifteen years. One week ago was

taken sick with chills and fever. Also had pain in stomach, was constipated, and was delirious some of the time. Had considerable cough and expectoration. Examination showed fever, coated tongue, emphysematous breathing, dusky hue of face, roughened breathing over whole right lung with moist crackling râles in base. Tubercle bacilli were found in the sputum, and a small amount of albumin in the urine. Heart action rapid and faint, and first sound accentuated. Pain in median line of thorax. Condition became rapidly worse. Had a severe pulmonary hemorrhage a few days before his death. During the last two days no sputum was raised, and patient was unconscious. Death occurred May 2, 1904.

NECROPSY (18 hours after death).—Body emaciated; rigor mortis and post-mortem lividity present; bruise over the left temple. Body opened by long median incision. The calvarium removed and the brain taken out and found to weigh 1,540 grams. The condition of the skull cap, the brain case, the sinuses and vessels, and the brain and its membranes noted and all found to be normal. Thorax: The costal cartilages are ossified. The anterior mediastinum contains several enlarged lymph glands. The pericardium is distended with fluid which on section is found to consist of thick, yellowish-green pus. The pus is circumscribed anteriorly. The pericardium is firmly adherent to the heart posteriorly, the cavity there being obliterated. The portion covering in the pus collection shows great thickening of its layers. The heart removed with the pericardium, it being impossible to separate them, and both together weigh 904 grams. The anterior surface of the heart has the "bread-and-butter" appearance, while the posterior surface is inseparable from the pericardium. The myocardium of the ventricles is increased, the thickness of the left being 3 cm. and that of the right 2 cm. Section gives the usual resistance and a light-brown color. The tricuspid valve is normal. The mitral valve is thickened and calcareous at its edges. The aortic valves are competent but show yellowish plaques. The pulmonary valve is normal. The right lung is so strongly bound down that it is impossible to remove it except in pieces. A section through it is very bloody and frothy in the lower lobe, and encounters areas of hardened, yellowish, and caseous masses in the upper lobe and apex. The left lung weighs 623 grams. The surface of the lower lobe is dark red, and the lobe shows diminished crepitation; on section, it is bloody and frothy. The upper lobe is in fairly good condition, though section reveals a cavity of moderate size containing caseous material. The right pleural cavity is obliterated; the left is normal except where the lung and pericardium are adherent. The thoracic aorta and the arch show many hardened, calcareous areas, some of which are ulcerated, while a few present vegetations. The arch is especially affected, the first portion being considerably dilated and aneurismal in character. The nerve trunks appear normal. The diaphragm on the right side extends to the upper border of the seventh rib; on the left side to the lower border of the same. Abdomen: The layers of the peritoneum appear smooth and shining. The spleen weighs 177 grams and is enlarged. The external surface is normal. Section shows prominence of the trabeculae. The right kidney weighs 177 grams, surface pale, fibrous capsule strips readily. Section gives diminished resistance, pale color, and prominence of pyramids. The left kidney weighs 183 grams and is in other respects similar to the right. The suprarenal capsules, urinary bladder, organs of generation, and rectum are normal. The duodenum is bile-stained and shows areas of slight congestion. The stomach contains a small amount of liquid material, the mucous membrane is anemic, and there are congested areas present. The gall ducts are patent and the gall bladder is normal. The liver weighs 1,620 grams; the surface is dark in color, smooth, and the lower portion is bile-stained. Section gives diminished resistance, a pale color, areas of fatty change, darkened lobular centers, and is greasy to the touch. The pancreas weighs 132 grams and is normal, as are also the solar plexus and mesentery. The small intestines show signs of subacute inflammation. The large intestines and vermiform appendix are normal. The abdominal aorta resembles the thoracic aorta in pathological conditions.

ANATOMICAL DIAGNOSIS.—Ossification of costal cartilages; enlarged mediastinal lymph glands; purulent pericarditis with effusion; cardiac hypertrophy; arteriosclerosis; chronic pleuritis and pulmonary tuberculosis; incipient aortic aneurism; renal and hepatic fatty degeneration.

C. R.
W. G. S.

XXI.

J. H.; male; color, white; age, 27 years; nativity, Massachusetts; arrived at United States Marine Hospital Sanatorium, Fort Stanton, N. Mex., July 30, 1903, with typical signs and symptoms of tuberculosis of the lungs. Sputum contained typical signs and symptoms of tuberculosis of the lungs. Sputum contained tubercle bacilli September 30, 1903. His urine showed a specific gravity of 1.032, much albumen, compound hyaline, granular and leucocyte casts, as well as free leucocytes. Died October 7, 1903, at 4.45 a. m.

Necropsy (10 hours after death).—Medium build; emaciated; skin dry and inelastic; hypostasis over back of trunk; skin and face yellow; rigor mortis present; body heat absent; ankles and legs pit slightly on pressure; panniculus and musculature scant; omentum scant in fat and blood contents; abdominal contents pale and anæmic. Abdominal cavity contained 700 c. c. of amber-colored fluid. Liver comes to costal margin in right nipple line. Mesenteric lymph glands enlarged. Anterior, middle, and posterior mediastinal lymph glands all enlarged. Larynx: Epiglottis ulcerated away; ventricule Morgagni also ulcerated; vocal cords uninvolved; stump of epiglottis covered with small pin-head granular nodules of a yellowish white color and firm consistency. In larynx below epiglottis was a thick, tough, white, Y-shaped scar. Left lung: Adherent to thoracic wall from apex to base; weight, 915 grams; several cavities at apex ranging in size from a pea to a walnut; lung where not occupied by cavities was thickly studded with large and small tubercles. Right lung: Adherent to thoracic wall at apex and base; weight, 1,125 grams; similar in all other respects to left. Pericardial sac contains 15 c. c. of serous fluid. Heart weight, 240 grams; both ventricles contain white clots; all valves apparently normal. Liver: Weight, 1,540 grams; lobules stand out distinctly, giving slightly nutmeg appearance; gall bladder filled with bile. Spleen: Weight, 270 grams; friable; connective tissue increased; follicles stand out like kernels of boiled sage. Right kidney: Weight, 200 grams; fibrous capsule strips easily; cortex pale; glomeruli visible as pin-point dots. Left kidney: Weight, 200 grams; fibrous capsule adherent at one or two points; similar in other respects to right. Adrenals, pancreas, and stomach apparently normal. Intestines contain ulcers with raised undermined edges varying in size from a pin head to a half dollar and extending from upper part of jejunum to ileo-cæcal valve. The cæcum is one mass of ulcerations. The colon contains similar ulcers from cæcum to sigmoid flexure. Urinary bladder, small and contracted; mucous membrane pale; contains small amount of turbid urine. Prostate, testes, and penis apparently normal.

MICROSCOPICAL EXAMINATION.—Spleen showed a passive congestion. The blood spaces were filled with blood; the connective tissue was much increased; the follicles had almost entirely undergone amyloid degeneration; the follicles appeared as masses of amyloid with an artery in the center and a few stained nuclei scattered throughout. A few millary tubercles were found containing giant and epithelioid cells. Liver showed some increase in Glisson's capsule; the lobules were smaller than normal; the columns of liver cells were atrophic; the portal and intralobular veins were distended with blood; areas of amyloid were found in the central and outer zones of the lobules; many small millary tubercles containing giant and epithelioid cells were found scattered throughout. Kidney showed perceptible general increase of connective tissue, considerable cloudy swelling in the convoluted tubes, a considerable amyloid deposit in the glomeruli, and congestion of both veins and arteries. Intestine contained ulcers with raised undermined margins. In places the ulcers had eroded down through the muscular coat to the serosa, which was thickened. Beneath the ulcers were many small abscesses, much small cell infiltration, some necrotic areas, and an occasional giant cell.

PATHOLOGICAL DIAGNOSIS.—Chronic pulmonary tuberculosis; chronic adhesive tuberculous pleuritis; chronic tuberculous laryngitis; beginning atrophic cirrhosis of liver; amyloid degeneration, millary tuberculosis, and passive congestion of liver; amyloid degeneration, chronic passive congestion and millary tuberculosis of spleen; amyloid degeneration, subacute parenchymatous nephritis, and chronic congestion of kidney; chronic tuberculous entero-colitis.

J. W. T.
P. M. C.

XXII.

J. C.; age, 32; nativity, New York; admitted to the United States Marine Hospital Sanatorium, Fort Stanton, N. Mex., October 6, 1900; died December 9, 1900.

PREVIOUS HISTORY (condensed from clinical notes of medical officer in command at New York, N. Y.).—Admitted to the United States Marine Hospital, New York, N. Y., May 14, 1900.

FAMILY HISTORY.—Negative.

PERSONAL HISTORY.—Cholera morbus and gonorrhœa six years ago; chancre last fall; has secondary rash now. Present sickness began in January with cough which steadily grew worse, along with expectoration. Lost 30 pounds in last year. Night sweats for past week. Diarrhœa occasionally. Pain in lower part of chest occasionally. Examination revealed a flat chest, and depressed supra and infra-clavicular spaces. Trunk exhibits disseminated papular syphilides. Fremitus marked on right side posteriorly. Apices dull. Broncho-vesicular breathing over left apex, with whispered voice sounds and mucous râles. Heart negative. Sputum contains tubercle bacilli. Syphilitic treatment and creosote given. Slight improvement resulted. One brief febrile attack occurred, and slight hæmoptysis was noted occasionally.

Condition as noted on arrival at Fort Stanton was as follows: Emaciation and weakness; typical chest, nails, and gums. Vocal fremitus greater over right chest; cervical and post-occipital glands enlarged. Entire left lung slightly dull; marked dullness in left base. Left lung: Numerous crackling râles throughout. Right lung: Same in upper lobes. Heart apparently normal. Urinalysis showed indican and strong diazo reaction. Sputum contained many typical tubercle bacilli. This was a very serious case on arrival here, and his condition grew steadily worse, death occurring on December 9, 1900.

NECROPSY (7 hours after death).—Emaciation; rigor mortis well marked. Calvarium not removed. Thorax: Anterior mediastinum normal. Heart and pericardium normal. Left lung had large cavity in apex; right lung several small cavities in apex. Both had scattered tubercles throughout; consolidation in apices surrounding cavities, especially left. Layers of pleuræ adherent at apices, so much so that when left lung was removed the large cavity in apex was torn open. The great vessels, nerve trunks, and diaphragm were normal. Abdomen: Omentum and spleen normal. Kidneys enlarged and congested; capsules not adherent. Supra-renal capsules enlarged. Urinary bladder, organs of generation, rectum, duodenum, stomach, gall ducts, liver, and pancreas normal. Mesentery had a few tuberculous glands. Small intestines, large intestines, and the great vessels normal. Vermiform appendix very long, extending to mesentery beneath gall bladder, and attached thereto.

MICROSCOPICAL EXAMINATION: Stained sections of kidneys and supra-renal capsules demonstrated many tubercle bacilli in the former, and a few in the latter.

C. R.

J. O. C.

XXIII.

P. T.; age, 27; nativity, New York; admitted to United States Marine Hospital Sanatorium, Fort Stanton, N. Mex., December 16, 1899; died December 8, 1900.

PREVIOUS HISTORY (condensed from clinical notes of medical officer in command at Baltimore, Md.): Admitted to United States Marine Hospital, Norfolk, Va., November 11, 1899.

FAMILY HISTORY.—Negative.

PERSONAL HISTORY.—Acute bronchitis, in March, 1898, from which present sickness dated; much cough and expectoration ever since; chagres fever in May, 1898; transferred to Marine Hospital, at Baltimore, Md., November, 15, 1899. Physical examination there showed emaciation, prominent clavicles and scapulae and alar chest; dullness over both lungs, most marked in supra and infra clavicular and scapular regions; circumscribed tympanic area in right mammary region; bronchial breathing all over, but most marked in dullest areas; cavernous voice over cavity, and some moist râles; bronchophony over dull areas; cough, worse at night, with profuse expectoration; November 16, tubercle bacilli found in sputum. While in this hospital the patient has gained about 10 pounds and improved generally.

Physical condition as noted on arrival at Fort Stanton was as follows: Infection at apices and small foci scattered throughout lungs. Little tissue broken down. Some cough and expectoration; appetite fair. Subsequently his condition underwent improvement to a certain extent, and then became stationary for a considerable time. Then retrogression began, slowly but surely. Examination April 21 showed emaciation, typical chest and nails, increased vocal fremitus superiorly, enlargement and tenderness of liver, dullness in apices and left base, crackling râles in upper parts of lungs, and accentuation of pulmonary second sound. Many tubercle bacilli demonstrated in the sputum. The patient gradually lost ground in every way. The liver continued to enlarge, giving great distress. Vomiting became very severe and was experienced almost daily. In the lungs more and more tissue became involved. Emaciation became extreme. Was bedridden for the last two or three months, and constantly asked for morphine to relieve abdominal pain. Distilled water was administered hypodermatically when pain was severe, the patient being told that it was morphine. Relief from pain always resulted. Death occurred early in the morning of December 8, 1900.

NECROPSY (9 hours after death).—Emaciation; partial rigor mortis. Calvarium not removed. Thorax: Anterior mediastinum contained enlarged glands. Heart was normal in size, but mitral valve slightly incompetent to water test. Pericardium contained about 50 c. c. of serous fluid. Left lung almost entirely consolidated. Right same in upper lobe, with many separate tubercles in lower lobe, which contained all functional lung tissue remaining. Layers of left pleura adherent nearly all over. Right same superiorly. Great vessels and nerve trunks normal. Diaphragm adherent to left lung. Abdomen: Omentum normal. Spleen enlarged. Kidneys had adherent capsules; were slightly congested and showed several bands of connective tissue at periphery. Supra-renals enlarged and contained many minute tubercles. Urinary bladder distended with urine. Organs of generation normal. Rectum and duodenum in a normal condition. Stomach showed great anæmia of its mucous membrane. Gall ducts normal; gall bladder distended with bile. Liver much enlarged, weighing ten pounds; a passive congestion. Pancreas enlarged. Mesentery contained large numbers of enlarged tuberculous glands. Small intestines, large intestines, and the great vessels normal.

MICROSCOPICAL EXAMINATION.—Tubercle bacilli demonstrated in tissue of supra-renal capsules.

C. R.

J. O. C.

XXIV.

J. H.; age, 25; nativity, Tennessee; color, black; was admitted to United States Marine Hospital Sanatorium, Fort Stanton, N. Mex., February 5, 1903, with signs and symptoms of far-advanced tuberculosis of the lungs. Died October 27, 1903.

HISTORY.—During the night of April 16 was seized with sudden pain in right side, dyspnoea, and general distress. Upon examination a right total pneumothorax was found. Later fluid collected in the cavity thus formed. It was aspirated repeatedly at intervals of about two weeks. At first the fluid withdrawn was sero-fibrinous, then at later aspirations it was sero-purulent, and later on purulent. The collection of fluid added to the patient's distress, and its removal gave marked relief. In May he began to have attacks of hemoptysis, which were repeated at intervals for the next few months.

NECROPSY (6 hours after death).—Body heat, present; rigor mortis, absent; panniculus, scant; musculature, fair; hypostasis beginning over back; omentum, scant in fat; peritoneum glistening and moist. Liver extended two finger breadths below right costal margin in nipple line. Small amount of serous fluid in abdomen. Right chest more prominent than left. Right costal margin protrudes. Right intercostal spaces less distinct than those on the left. Right pleural cavity was distended and partly filled with a foul-smelling pus. Except at the apex the right lung was collapsed against the spinal column and carnified. At apex it was adherent to the thoracic wall and contained a cavity the size of a large walnut. The lung contained many tubercles and consolidated nodules and some small cavities. Left lung was adherent to thoracic wall from apex to base; weight, 570 grams; contained two small cavities in lower part of upper lobe and a few tubercles scattered throughout the lung. For the most part the lung was air containing. Pericardial sac contained 30 c. c. of a clear serous fluid. Pericardium was smooth and apparently normal. Heart was much larger than

patient's right fist. The ventricles were dilated and the muscle atrophied. Left ventricle was filled with a large white clot. Valves were apparently normal. Weight of heart, 300 grams. Liver: Weight, 1,420 grams; Glisson's capsule thickened; liver congested; lobules made out with some difficulty. Spleen: Connective tissue increased; follicles few and indistinct; weight, 300 grams. Left kidney: Weight, 190 grams; fibrous capsule stripped with difficulty; small yellowish-white nodule in medulla; pyramids pale. Right kidney: Weight, 150 grams; similar to left. Pancreas and adrenals apparently normal. Urinary bladder filled with clear amber urine; walls smooth and apparently normal. Testes apparently normal. Aorta normal. Stomach and intestines normal.

MICROSCOPICAL EXAMINATION.—Liver: Glisson's capsule considerably increased; portal vein much congested; intralobular veins somewhat congested; some small cell infiltration; a few millary tubercles, with giant and epithelioid cells scattered throughout. Spleen: Connective tissue much increased; blood vessels and spaces congested; follicles atrophic; millary tubercles, with epithelioid and giant cells scattered throughout; arteries sclerotic. Kidney: Moderate congestion; some cloudy swelling in convoluted tubules; increase of connective tissue between tubules; millary tubercles of large size scattered throughout cortex and medulla.

PATHOLOGICAL DIAGNOSIS.—Right total pyo-pneumothorax; pulmonary tuberculosis; chronic adhesive tuberculous pleuritis; dilatation of the heart; chronic congestion, cirrhosis and millary tuberculosis of liver; chronic congestion, arterio sclerosis and millary tuberculosis of spleen; millary tuberculosis of kidneys.

J. W. T.
P. M. C.

XXV.

G. S.; age, 28; nativity, Sweden; color, white; clinical diagnosis, tuberculosis of the lungs; complications, tuberculous laryngitis; admitted to United States Marine Hospital Sanatorium, Fort Stanton, N. Mex., June 24, 1903, complaining of occasional fever, cough, dyspnoea, expectoration, and loss of weight; mother died of tuberculosis; had malaria five years ago, and pneumonia three and one-half years ago; present illness began fourteen months before admission; after arrival he declined steadily, his voice became husky, and later he was unable to speak above a whisper; died October 6, 1903, at 6.45 a. m.

NECROPSY (30 hours after death).—Emaciation extreme, rigor mortis present, body bent absent, hypostasis over back of trunk and legs, larynx abnormally large and prominent, skin dry and inelastic, panniculus and musculature scant. Contents of abdomen moist and glistening. Omentum scant in fat, shows passive congestion. Liver extends three finger breadths below right costal margin in nipple line. Omentum adherent to parietal peritoneum in several places. Costal cartilages soft; intercostal spaces wide, ribs narrow; internal mammary veins congested; anterior mediastinum otherwise negative. Pericardial sac contained about 10 c. c. straw-colored fluid; both pleural cavities obliterated; visceral and parietal pleurae bound throughout entire extent by firm adhesions. Heart: Weight, 200 grams; much below normal in size; one or two pin-head sclerotic patches just above aortic semilunar valves. Heart otherwise normal. Left lung contains in upper lobe two cavities, each the size of an apple. The cavities are traversed by thrombosed blood vessels and contain much mucopurulent fluid. The walls consist of infiltrated lung tissue and vary in thickness from 1 to 30 mm. The cavities fill practically the entire upper lobe. Lower lobe contains tubercles scattered throughout and is congested and oedematous. Right lung: Upper lobe consists of one large cavity similar in all respects to those in the left. Middle lobe contains tubercles scattered throughout. Lower lobe contains cavity the size of walnut and tubercles scattered throughout. Both lower lobes congested. Larynx: Epiglottis ulcerated over both anterior and posterior surfaces; is bound to root of tongue by adhesions; is contracted and curled outward; true and false cords (vocal) and ventriculi Morgagni ulcerated. Liver: Weight, 1,835 grams; slightly larger than normal for size of patient; consistency, firm; impression of ribs show on anterior surface; on section pale, and lobules distinct. Gall bladder filled with bile. Spleen: Weight, 147 grams; smaller than normal; follicles exceedingly prominent, standing out like well-cooked sago; connective tissue, increased; color lighter than normal. Kidneys: Right, weight 110 grams; cortex, pale; glomeruli seen with difficulty; consistency, softer than normal; fibrous capsule peels with ease. Left, weight 147 grams, larger than right; fibrous capsule adherent at one or two points; similar

in other respects to right. Suprarenals apparently normal. Stomach walls pale and atrophic. Intestines: Jejunum congested over area size of hand. Lower jejunum, ileum, and cæcum contain ulcers varying in size from pin head to a quarter, with raised undermined margins. These ulcers extend in places through to the serosa. Pancreas apparently normal. Urinary bladder filled with turbid yellow urine, walls smooth, thin, and pale. Testes, prostate, and penis apparently normal.

MICROSCOPICAL EXAMINATION.—Liver contains miliary tubercles devoid of blood vessels and containing giant and epithelioid cells. It also contains a moderate amount of amyloid tissue located chiefly in the middle zone of the lobule. The columns of liver cells are small and atrophic. Fatty droplets are seen throughout the lobules. Spleen: Follicles are enlarged and transformed into amyloid tissue. A few miliary tubercles with giant and epithelioid cells and no blood vessels are found.

PATHOLOGICAL DIAGNOSIS.—Tuberculous laryngitis; chronic adhesive pleuritis; chronic pulmonary tuberculosis; small heart; amyloid liver; fatty degeneration of liver; miliary tuberculosis of liver; amyloid spleen; miliary tuberculosis of spleen; chronic adhesive peritonitis; chronic enterocolitis (tuberculous).

J. W. T.

P. M. C.

XXVI.

G. A.; age, 21; nativity, California; color, white; admitted to the United States Marine Hospital, San Francisco, Cal., January 16, 1903; died May 5, 1904.

HISTORY.—Family history negative. Previous history of measles when a boy and typhoid fever three years ago. Present sickness apparently began a long time ago, with vague pains in right side of abdomen, along with gastrointestinal disturbance and more or less fever. One month ago began to have severe attacks of pain across abdomen, which are growing more and more severe. Unable to sleep on account of pain. Sharp, shooting pains on urination. Dullness and tenderness over lower part of abdomen. No leucocytosis present. Urinalysis negative. Moderate, irregular fever. A large, hardened mass has developed in the left side of the abdomen below the umbilicus. January 29, laparotomy performed below umbilicus to left of median line. A large amount of foul-smelling pus evacuated and drainage tubes inserted. Wound dressed daily. Great improvement at first, followed later by development of symptoms on right side. March 17, laparotomy over McBurney's point. Large quantity of foul pus evacuated. Wound dressed daily. Great improvement, followed again by recurrence in right side. April 29, laparotomy performed in same situation. A large pus sac opened into and vermiform appendix removed. After transitory improvement patient again became worse. June 2, operated on again, enlarging old wounds and exposing several cavities filled with pus. Cavities flushed out and packed. Improvement followed by relapse. Pain this time in the right hypochondrium. July 3, superficial incision made in abdominal wall evacuating about 200 c. c. of pus. Improved at first, then pains again. July 10, operated on in right lumbar region and about 100 c. c. of pus removed. Some improvement. July 30, a small, superficial pus pocket incised in abdominal wall. Later all sinuses made to communicate. Much discharge from the lumbar wound. Considerable improvement in the general condition. September 18, contracted acute follicular tonsillitis which lasted until September 25. Pain complained of in back and lower part of right chest, though some general improvement continues. Temperature runs above normal. October 16, began to use Stearn's antistreptolytic serum. Considerable reaction, followed by improvement. November 9, an abscess opened in the right side discharging a quantity of pus. November 10, gas bubbled through the lumbar sinus having a faecal odor, followed later by faecal matter. General condition good, very little pain. Had to stop serum treatment as reaction always left patient very weak. During January, 1904, a cough developed, with watery expectoration and occasional laryngeal spasms. February 3 lungs showed moist râles, mostly during inspiration, in dependent portions. Expectoration became purulent and more abundant, with occasional hemoptysis. Tubercle bacilli could not be demonstrated in the sputum. Severe night sweats and septic temperature. Diarrhoea often present and general condition growing gradually worse. Pus burrows under the skin in various places and is evacuated wherever found. The faecal fistula discharges more profusely, both pus and faeces. April 29, a final

surgical operation was performed under chloroform anæsthesia. The main fistulous tract in the right lumbar region was enlarged toward the abdomen, and the anterior border of the quadratus lumborum muscle exposed, under which, for some distance posteriorly, the general pus cavity was found to extend. The abdominal muscles were divided forward until the fecal fistula was traced to its origin in the outer surface of the ascending colon, just below the hepatic flexure. The gut was very strongly adherent to the neighboring structures. The pus cavity seemed to extend between the liver and the diaphragm. The gut was freed for a short distance above and below the fistulous opening, and the opening was found to measure about 2 cm. in the long axis of the bowel. The opening was first closed by the Ford inversion stitch, employing No. 2 silk, and including only the mucous and submucous coats. Over this was sewed a continuous catgut suture, completely burying the Ford suture. When the fistula was entirely closed another large collection of pus was then discovered between the ascending colon and the right pelvic wall, but as the patient's condition did not then warrant further operative measures the upper opening was merely dilated to allow drainage. The skin wound was partially closed with silk and the cavity was packed with gauze. Several fistulous openings in the neighborhood were connected by incisions and packed. The operation consumed two hours, but only half an ounce of chloroform was used. Salines and stimulants were given when indicated. Consciousness was rapidly regained and great pain complained of. Morphine and atropine were given. During the first three days the discharge from the wound was sero-purulent, but after that time it again became fecal. The temperature at first fell to normal, then became subnormal. There was profuse expectoration, purulent and bloody in character. On the fifth day he began to weaken rapidly, and there was relief from pain. Death occurred on the following day at 6.10 p. m.

NECROPSY (16 hours after death).—Body greatly emaciated, pupils dilated, rigor mortis and post-mortem lividity present. There is a large incision extending from the right lumbar region forward into the abdomen. The stitches are still in the forward portion: the edges of the back part are open. Scars of seven other incisions are plainly visible in the right lumbar region and over the lower portion of the abdomen. There is practically no subcutaneous fat. The lower margin of the ribs on the left side projects prominently. The calvarium not removed, the relatives having made a request to that effect. The right thigh can not be completely extended, owing to contraction of the sartorius tendon. Thorax: The anterior mediastinum contains several enlarged lymph glands. The lungs do not meet in the median line. The right pleural cavity is obliterated and the right lung is bound strongly to the thoracic wall all over, including the diaphragm. It is removed with difficulty and is found to weigh 800 grams. The lung does not collapse, is only slightly crepitant, and the interlobular fissures are nearly obliterated by adhesions. The external surface is roughened and mottled. At the base is a small abscess cavity which connects with the diaphragm. On section there is increased resistance and the entire lung is seen to be infiltrated with hardened, yellowish masses, some of them showing caseation. Between these areas the tissues are very bloody and frothy. The left pleural cavity is also obliterated, but by more easily separable adhesions. The left lung weighs 790 grams, does not collapse, crepitates very little, the interlobular fissure is obliterated, and on section is seen to be nearly similar to the right lung. The pericardium contains a moderate amount of clear, serous fluid. It is adherent to both lungs by firm bands. The heart weighs 280 grams, is pale in hue, and the surface is smooth. The right auricle and ventricle contain chicken-fat clots, as do also the left cavities, all clots being separable. The aortic and pulmonary valves are competent to the water test, and the tricuspid and mitral valves are normal. The myocardium is very pale in color and cuts with normal resistance. The wall of the right ventricle is 1.5 cm. in thickness; that of the left ventricle is 2 cm. There are yellowish areas about the sinuses of Valsalva. The great vessels and nerve trunks are normal. The diaphragm on the right side extends to the lower border of the seventh rib: on the left side to the upper border of the seventh. It is strongly adherent to the bases of the lungs and to the entire posterior surface of the liver. On the right side there is an opening which connects the right lung and the liver. Abdomen: First opened by an incision in the median line, then the operation wound is opened. The great omentum is very thin, contains almost no fat, and is adherent to the abdominal wall in places. The spleen is enlarged, soft and pale, and weighs 275 grams. On section there is normal resistance, pale color, firm pulp, and slight increase of fibrous tissue.

The left kidney weighs 175 grams. The surface is smooth, pale in color, and shows yellowish-white areas. The fibrous capsule strips easily. Section seems to give about normal resistance. The cut surface is pale, and shows areas of fatty and amyloid change; the pyramids are rather prominent. The right kidney is removed with difficulty. Its anterior surface forms a part of wall of the large abscess cavity. It weighs only 130 grams, and the general appearance, except anteriorly, resembles that of the left organ. Section gives normal or slightly increased resistance and very pale color. The cortical markings are almost obliterated and there is present extensive amyloid and fatty change. The fibrous capsule is adherent on the anterior surface, and there are small subcapsular hemorrhages. The suprarenal capsules appear normal. The urinary bladder contains a small amount of clear urine. The organs of generation are normal. The rectum contains a small amount of solid fecal matter. The duodenum and stomach are normal. The gall ducts are patent, and the gall bladder contains a moderate amount of fluid bile. The liver is firmly bound to the diaphragm over its posterior surface. Its anterior border is adherent to the costal margin, the hepatic flexure of the colon and the peritoneum lining the anterior abdominal wall. The liver is very difficult to remove. It weighs 1,625 grams. The external surface is roughened where adhesions were present, especially over the quadrate lobe. On the outer border of the right lobe there are several yellowish-white nodules of pea size. The surface of the left lobe is pale and smooth. In the right lobe is an abscess which occupies the greater portion of the lobe. It is pyramidal in shape, the apex communicating through the diaphragm with the base of the right lung, while the base arises from the general pus cavity between the ascending colon, right kidney, liver, and abdominal wall. The contents of the liver abscess consist of dark, purulent, broken-down liver tissue. The line of demarcation between the abscess wall and the surrounding hepatic tissue is very sharply defined. The liver tissue proper is pale and shows light-colored areas. On section there is diminished resistance, pallor, friability, and patches of light yellowish color which impart a greasy feeling. External to the ascending colon there occurs a large cavity, measuring 10 cm. in length, which is filled with greenish, creamy pus. The pancreas and the solar plexus appear normal. The mesentery contains several enlarged lymph glands. The small intestines are partially bound to the pelvic wall in the right inguinal region by separable, fibrinous adhesions; otherwise they are normal. The vermiform appendix is absent, having been removed at a former surgical operation. The cæcum, ascending colon, and hepatic flexure are very strongly attached to the abdominal wall. An irregular opening in the outer side of the ascending colon communicates with the abscess cavity in the lumbar and right hypochondriac regions. On dissecting out this portion of the bowel it is seen that the before-mentioned opening is not the fistulous opening that was sewed up during the surgical operation five days before, but a new lesion formed since. No trace can be found of the external catgut suture, but the internal Ford inversion stitch is present and still holds in apposition the edges of the original fistulous opening. The aperture now present was apparently formed later by tearing of the tissue immediately in front of the sutures, owing to impaired vitality, peristalsis, and constant presence of pus, which it was impossible to prevent. Semisolid fecal matter is present in all the large intestines. The great vessels are normal.

SUMMARY.—Large abdominal surgical wound on right side; scars of seven previous incisions; contracture of sartorius tendon; chronic, bilateral, obliterative pleuritis complete; pulmonary tubercle, bilateral; perforation of diaphragm; peritoneal and omental adhesions; fatty and amyloid degeneration of kidneys; abscess of right lobe of liver; fatty degeneration of liver; adhesions between liver, colon, diaphragm, abdominal wall, and right kidney; large pus cavity in right lumbar and hypochondriac regions; pelvic abscess; enlarged mesenteric lymph glands; fibrinous pelvic adhesions of small intestines; absence of the vermiform appendix; perforation of ascending colon; wound in ascending colon showing a Ford stitch holding the edges in apposition.

C. R.
W. G. S.

XXVII.

H. W.; age, 29; nativity, Ireland; admitted to the United States Marine Hospital, San Francisco, Cal., December 30, 1903, died January 12, 1904.

HISTORY.—Transferred from the United States Marine Hospital at Port Townsend, Wash., to this hospital for his present disease, which began about

seven months ago. Received in bad condition. Family history negative. Personal history of chronic suppurative otitis media, four attacks of gonorrhœa, and for last three years has had frequent attacks of "colds." Has had constant cough, expectoration, fever, loss of weight, night sweats, and dyspnoea ever since. In addition to the above he had numerous hemorrhages, some of which were quite severe. Both lungs gave out numerous moist, crackling, and bubbling râles all over. Very weak, and suffers from dyspnoea and sweats. He requires daily about one-fourth grain of morphia hypodermatically, having been addicted to the habit for several months. During his stay at this hospital he gained strength rapidly, walking about with ease and eating very well. A severe hemorrhage from the lungs, amounting to about 200 c. c., occurred on January 12, 1904, from which he died at 12 m. the same day.

NECROPSY (23 hours after death).—Body much emaciated; rigor mortis and post-mortem lividity marked; height, 5 feet 4 inches. Brain: Weight, 146 grams. Upon opening the dura mater the pia mater is seen to be somewhat distended with a clear serous fluid. The number of convolutions are exceedingly small. The tissues are apparently normal. Thorax: The costal cartilages are not ossified. No fat is found in the anterior mediastinum. The right lung extends slightly across the median line. The left lung is somewhat retracted. The right lung is adherent to the costal cartilages at the base, and also firmly adherent to the diaphragm. The right lung weighs 1,250 grams. The entire lung has a leathery feel, and does not crepitate except over a small amount of tissue in middle lobe. On section all lobes found to be full of tubercles and small cavities containing pus and cheesy masses. The external appearance of the lung is mottled bluish red. The left lung weighs 1,020 grams. The external appearance and the tissue on section present the same appearance as the right lung. The heart weighs 370 grams. The outer surface is covered with a very small amount of fat. The pericardium contains a large amount of serous fluid; it is strongly adherent to the left lung. The muscular tissue is pale in color. Thickness of the wall of the right ventricle is $\frac{1}{2}$ cm. The right auricle contains a large nonadherent mixed clot. The pulmonary artery is empty. The left ventricle contains a large currant-jelly clot extending into the aorta. Thickness of the wall of the left ventricle, $1\frac{1}{2}$ cm. Valves of right side of heart normal. Mitral valves show thickened atheromatous patches at the base of the leaflets. A similar condition exists at the base of the aortic valves. The aorta shows numerous small atheromatous patches throughout its extent. The diaphragm reaches to the fifth rib on the right side and to the sixth on the left; it is adherent to the base of the left lung and to the pericardium. Abdomen: There is very little subcutaneous fat. Upon opening the abdominal cavity the intestines are seen to be distended with gas. The omentum and mesentery contain practically no fat. The spleen weighs 150 grams and is of a dark brown color. On section, tissue found to cut with diminished resistance, the pulp being soft. The liver weighs 1,500 grams. The surface is pale in appearance. On section, tissue found to cut with diminished resistance; appearance pale and slightly "nutmeg." The left kidney weighs 140 grams. The capsule strips easily. On section, tissue cuts with slightly increased resistance, cortex swollen, pale, and the pyramids injected. The right kidney weighs 140 grams. The capsule strips easily. On section tissue reveals a similar appearance to the left. Pancreas weighs 40 grams, and its tissue is apparently normal. Suprarenal capsules are enlarged and cut with increased resistance. The stomach is distended with gas; found to contain coffee-colored fluid. Walls very anæmic. The small intestine is distended with gas and is for the most part empty. The walls are anæmic. The appendix is about 7 cm. long, very narrow, and empty. The cæcum is bound down with adhesions to the abdominal wall. The large intestine contains a small amount of fecal matter, but is otherwise normal. The urinary bladder contains about 100 c. c. of turbid urine. The generative organs are normal.

H. F. T.
W. G. S.

XXVIII.

N. A.; aged 23; nativity, Norway; color, white; admitted to the United States Marine Hospital, San Francisco, Cal., September 26, 1903; died October 8, 1903.

HISTORY.—The patient complained of pain in the abdomen, diarrhœa and loss of appetite. Body emaciated, face drawn, eyes bright, tongue moist, coated at center, dullness and increased vocal fremitus over apex of right lung, heart normal, tenderness on pressure over all parts of abdomen, temperature 37.8° C.;

pulse, 88; respiration, 22. After the first two days his temperature rose and stayed above 39° C. until his death. His bowels were very irregular, at one time constipated and at another very loose. October 2 he passed a large stool of a chocolate color. He would eat but little and his food had to be forced upon him. October 7 he complained of severe pains in his abdomen, which was tympanitic and tender on pressure. He also vomited a quantity of greenish matter. These symptoms continued throughout the day, and he died at 11 a. m. on the following day.

NECROPSY (6 hours after death).—Post-mortem lividity marked on back and chest, especially the latter. Weight of brain, 1,480 grams; tissues apparently normal. Thorax: The anterior mediastinum is normal. The pericardium contains a small quantity of yellowish fluid. The heart weighs 285 grams. A small chicken-fat clot extends from the right auricle through the right auriculo-ventricular opening into the right ventricle, and from there reaches into the pulmonary artery. The valves of the heart are normal; the tissue is of a pale reddish color. The left lung weighs 450 grams. On section the apex is found to contain numerous caseous tubercles; no tubercles are found in the rest of the lung, but its tissue is congested. The right lung weighs 482 grams; tissue congested, but otherwise apparently normal. The great vessels, nerve trunks, and diaphragm are normal. Abdomen: Gas escapes from the peritoneal cavity when it is opened, and about 500 c. c. of yellowish, bad-smelling fluid is found in it. The viscera are covered with a thick, yellowish-white lymph which binds them together in one mass. The omentum is dark red in color, retracted, and adherent to the intestines, which are distended with gas. The spleen weighs 330 grams, the pulp is soft and of reddish-brown color, and blood escapes on section. A supernumerary spleen the size of a large marble is present. The left kidney weighs 187 grams, capsule strips easily, cortical pale and shows yellowish striations, pyramids of deep red color. The right kidney weighs 180 grams; tissue in same condition as other kidney. The suprarenal capsules are normal. The urinary bladder contains a small quantity of urine. The organs of generation, rectum, and duodenum are normal. The stomach contains a small quantity of dark brown fluid and mucus, and its walls are congested. The gall ducts are patent. The liver weighs 2,080 grams; tissue cuts with increased resistance; section of pale reddish color; centers of lobules dark and prominent. The pancreas and solar plexus are normal. The mesenteric lymph glands are enlarged and hardened, but not caseous. The mucous membrane of the lower portion of the ileum is congested and hemorrhagic, and shows a number of deep transverse ulcers extending to the serous coat; one of these has in its base a perforation of goose-quill size. The large intestines and great vessels are normal. The vermiform appendix is normal.

ANATOMICAL DIAGNOSIS.—Tubercle of left lung; passive congestion of right lung; acute exudative peritonitis; omental and intestinal adhesion; acute splenitis; supernumerary spleen; acute nephritis; acute gastritis; acute hepatitis; tubercle of mesenteric lymph glands; tubercle of ileum with perforation.

W. G. S.

XXIX.

G. H.; age, 30 years; nativity, Norway; admitted to the United States Marine Hospital, San Francisco, Cal., November 25, 1903, died December 8, 1903.

HISTORY.—Patient stated he caught a severe cold ten days ago. He is now extremely weak, has no appetite, is short of breath, has bad cough and pain on left side.

EXAMINATION.—Roughened breath sounds heard over both lungs, dullness with tympanitic resonance over left lung, râles heard at base of left lung, abdomen flat, tympanitic, not tender on palpation, bowels constipated, face red, tongue coated. Temperature, 39.4° C.; respiration, 25; pulse soft; sputum contains no tubercle bacilli; urine, specific gravity 1.026, no albumen or sugar present. On the 30th the patient coughed up considerable blood, and he continued to have hemorrhages until his death; his temperature remained high throughout his sickness; he died from exhaustion at 4.45 p. m. December 8, 1903.

NECROPSY (12 hours after death).—Height, 5 feet 8 inches; mole on left forearm. Brain: Weight, 1,575 grams; tissue normal. Intestines filled with gas, lower end of small intestine congested, appendix small, no evidence of inflammation of its tissues. Omentum contains a small quantity of fat. Peritoneum thickened, tissue of yellowish slate color; cæcum, lower portion of

descending colon and sigmoid flexure bound down to abdominal wall by strong adhesions. Pericardial sac adherent to left pleura, with only a small quantity of yellow fluid present in the sac. Valves of heart normal; muscular tissue of bright red color. Left pleural cavity contains about 250 c. c. of bloody fluid; it is lined with a thick soft fibrous membrane and communicates with one of the bronchial tubes which opens directly into it; the pleura is bound down on all sides by strong adhesions; the lung is collapsed and pushed over toward the right. The lung is reached by tearing through the dense pleura; weight, 490 grams; tissue crepitates at apex, but is hard and dense in all other portions; color on section dark red, no tubercle present. Right lung: Weight, 670 grams; upper lobe crepitant, lower lobe slightly crepitant and feels leathery to the touch; tissue cuts with increased resistance, and blood exudes from the cut surface; no tubercles found. Spleen: Weight, 187 grams; pulp very soft, color deep red. A supernumerary spleen size of a marble is found attached to the spleen at its lower portion by a small mesentery. Left suprarenal capsule normal. Left kidney: Weight, 200 grams; capsule strips readily, cortical portion swollen, pyramids prominent. Right kidney: Weight, 175 grams; tissue in same condition as other kidney. Stomach contains undigested milk; numerous small round ulcers found in the lower 2 feet of ileum; borders of ulcers, red and indurated; ulceration does not extend through serous coat. Cultures taken from spleen show no growth.

W. G. S.

XXX.

G. B.; aged 45; nativity, Sweden; admitted to the United States Marine Hospital, San Francisco, Cal., January 22, 1904; died February 29, 1904.

HISTORY. Has been sick for over a month, feels drowsy all the time, appetite poor, has pain in bowels, gets short of breath on exertion, cough is bad at times, has had hemorrhages from his nose for two weeks.

PHYSICAL EXAMINATION.—Slightly deaf in both ears. Dullness over base of both lungs and the breath sounds are harsh over these regions. A loud systolic murmur is heard over the whole cardiac area; the liver and spleen are enlarged. A number of petechiæ are present over the body. The legs are swollen and the veins enlarged. Tubercle bacilli are present in the sputum. Urine, specific gravity 1.018, acid reaction; dark yellow color; albumen is present in large quantities and the microscope shows granular and hyaline casts. Temperature 37.6°, pulse 104, respiration 24. The patient had repeated hemorrhages from his nose. The dyspnoea was so bad that he could not sleep except in a sitting posture. Ascites developed and 3,100 c. c. of fluid was drawn off. He had difficulty in passing his water and frequently the catheter had to be used. Fever of an irregular type was present throughout his illness. He finally died from exhaustion at 4.30 a. m., February 29, 1904.

NECROPSY (6 hours after death).—Rigor mortis marked; length of body 5 feet 7 inches; tattoo marks on arms; scrotum and legs oedematous. Peritoneum much thickened, bladder filled with urine although patient was catheterized four hours before death. There is an abnormal amount of fluid in the abdominal cavity. Brain: Weight 1,270 grams; tissue soft. Costal cartilages are cut through with some difficulty owing to their being partially ossified. The cavity of the pericardium is obliterated, the two layers of the pericardium being adherent to each other throughout; this adhesion, however, is slight and the layers are easily separated. Heart: Weight 460 grams; valves of right side normal, but the leaves of the mitral and aortic valves are greatly thickened and hard calcareous nodules as large as peas are present on their edges. The thickness of the wall of the right ventricle is $\frac{1}{2}$ cm., of the left ventricle $1\frac{1}{2}$ cm. Left lung is bound down to the chest wall by separable adhesions; weight 800 grams; a milk spot is present at apex of lower lobe; the lung is crepitant throughout; the tissue on section is reddish gray in color and is slightly oedematous. No tubercles are demonstrable nor are any tubercles present. Right lung: Weight 880 grams; condition of tissue same as left lung. Bronchial glands are slightly enlarged and the tissue is hard on section. Spleen is torn on being removed, due to the fact that the upper portion is bound down to the surrounding structures by strong adhesions; weight 600 grams; upper portion hard, tissue dense, trabeculæ prominent; lower portion soft and mushy; pulp oozing out when capsule is broken. A small supernumerary spleen, weight 10 grams, of normal tissue is present. Suprarenal capsules are softened and their interior is broken down. Left kidney: Weight 330 grams, cortical substance greatly increased,

color, dirty reddish white with minute yellow striations. Right kidney: Weight 265 grams; tissue in same condition as left kidney. Bladder walls thickened; small submucous hemorrhages are present; urethra normal; stomach small; large intestines and appendix are normal. Liver: Weight 2,915 grams; numerous light yellow elevated spots size of a small pea are present over its whole surface and section shows that these yellowish areas are present throughout the substance of the whole organ; the tissue cuts with increased resistance, and a dark nutmeg condition is found to be present. Gall bladder contains a small quantity of bile; bile ducts patent.

W. G. S.

XXXI.

J. C.; age 37; nativity New York; color white; admitted to United States Marine-Hospital Sanatorium, Fort Stanton, N. Mex., October 3, 1903.

HISTORY.—Always enjoyed good health, except for bad colds during the winter months. Had night sweats, cough, expectoration, and loss in weight. Gave history of syphilis. Hemoglobin was 50 per cent as estimated with Tallquist's hemoglobin scale. Tubercle bacilli were present in sputum. Died October 12, 1903, at 1 a. m.

NECROPSY (12 hours after death).—Medium build, skin dry and inelastic, panniculus scant, musculature medium, small copper-colored pigmented spots over abdomen. Head partially bald, mustache reddish, beard fairly thick, hair over chest, pubic hair fairly abundant. Upper incisors and first molars gone, other teeth in fairly good condition. Rigor mortis slight in arms, present in jaws, eyelids, legs, abdominal muscles, and neck. Body heat absent. Hypostasis over back of thorax, arms, and legs. Side of face soiled with small amount of dry vomitus. Veins of forehead and scalp dilated. Pupils slightly dilated; ears cyanotic; scrotum shows hypostatic congestion. Upon turning body upon face vomitus ran from mouth. Spinal cord normal. Brain: Weight 1,560 grams. Vessels of dura slightly injected; pia vessels also injected; surface of brain moist and glistening; small amount of fluid in lateral ventricles; brain otherwise normal. Abdominal section: Panniculus of light-orange color, small in amount; muscles pale but fairly well developed; vessels of omentum, intestines, and peritoneum slightly congested; abdomen contained 500 c. c. of a clear serous fluid containing a few flocules of fibrin. Liver comes to right costal margin on nipple line. Lower margin of liver stained a greenish blue (bile). Thoracic section: Anterior mediastinum, thymus fat somewhat persistent; lymph glands enlarged to size of beans. Pericardium contains 40 c. c. of slightly turbid serous fluid. Heart: Weight, 325 grams; subpericardial fat quite abundant. Valves and walls of heart apparently normal. Arch and valves of aorta stained a pink color. Glands in middle and posterior mediastina considerably enlarged. Larynx apparently normal. Left lung adherent to thoracic wall from apex to base and to diaphragm; weight, 1,130 grams; consolidated and firm to the feel; apex contained cavity size of an apple, besides small cavities in upper lobe. Lower lobe contained tubercles scattered throughout with many small cavities ranging in size from a pea to a walnut. Upper lobe, where not occupied with cavities or connective tissue, was hepatized. Right lung: Adherent to thoracic wall at apex laterally and posteriorly; weight, 950 grams; contained in apex several cavities size of hickory nuts; entire upper lobe, where not occupied by cavities or connective tissue, was hepatized. Middle and lower lobes contained infiltrated areas and tubercles scattered throughout. Liver: Weight, 2,370 grams; gall bladder filled with a clear golden bile. On section the lobules stood out distinctly. No pathological changes found. Spleen: Weight, 310 grams; consistency soft; capsule adherent to surrounding peritoneum and viscera; parenchyma congested and friable; follicles seen with some difficulty. Connective tissue increased. Left kidney: Weight, 205 grams; fatty capsule fair in amount; stellate veins injected; fibrous capsule peeled easily. Small urinary cyst in cortex; kidney slightly congested; glomeruli easily visible. Right kidney: Weight, 205 grams. Similar in all respects to left. Pancreas apparently normal. Suprarenals apparently normal. Mesenteric and retroperitoneal glands all enlarged. Aorta apparently normal, except for a few small sclerotic plaques just above aortic semilunar valves. Mucosa of esophagus roughened with small pin-head raised areas having appearance of old granulations. Stomach contained 500 c. c. of sour-smelling sero-mucoid fluid, containing particles of undigested milk. Intestines: Ileum contained ulcers varying in size from a pin head to a half dollar, with elevated, undermined edges, and extending through the submucosa.

Lower part of ileum much congested. Urinary bladder distended with clear urine. Mucosa of bladder slightly injected. Walls apparently normal, except for small hæmatoma size of pea beneath mucosa. Prostate and testes apparently normal.

MICROSCOPICAL EXAMINATION.—Liver showed small cell infiltration, congestion of intralobular capillaries, slight increase of intralobular connective tissue. Columns of liver cells in many places atrophic; many hypertrophic, deeply stained nuclei, also many small and many faintly staining nuclei. Connective tissue of spleen much increased; follicles were few and small; arteries showed sclerosis; considerable black pigment scattered throughout, but especially located around the trabeculae. Kidneys: A few obliterated glomeruli; some cloudy swelling in convoluted tubules; very slight increase in connective tissue; many small calcareous deposits scattered throughout medulla. Lymphatic glands in middle and posterior mediastinum contained tubercles with epithelioid and giant cells. Intestines contained many ulcers extending into submucosa. In base of ulcers and at other points in the intestines were found tubercles devoid of blood vessels and with epithelioid and giant cells and necrotic areas. In the neighborhood of the ulcers the intestines showed marked congestion.

PATHOLOGICAL DIAGNOSIS.—Partial, acquired, symmetrical alopecia; acute congestion of meninges; healed pericarditis; chronic pulmonary tuberculosis; chronic adhesive tuberculous pleuritis; tuberculosis of lymph glands; chronic ulcerative tuberculosis of intestines; urinary cyst of kidney; hæmatoma of urinary bladder; calcareous deposits in medulla of kidney.

J. W. T.
P. M. C.

XXXII.

J. A.; age, 20; nativity, Newfoundland; admitted to United States Marine Hospital, Boston, Mass., April 28, 1903; died September 1, 1903.

FAMILY HISTORY.—Father and mother both dead, causes unknown; four brothers living and in good health.

PREVIOUS HISTORY.—Always well previous to present illness.

PRESENT HISTORY.—Began to have a bad cough about one month ago. Went out to sea and caught cold and has felt worse ever since. Expectorates freely. Has night sweats, and has been losing weight. Pain in right chest on coughing. Appetite poor. Bowels regular. Sleeps poorly, chiefly on account of the troublesome cough.

PHYSICAL EXAMINATION.—No areas of dullness found on percussion. Respiratory sounds harsh; respiration. 30. Heart sounds normal; pulse, 80, soft in quality. Abdomen normal. Urinalysis negative. Tubercle bacilli found in sputum.

TREATMENT.—Elixir iron, quinine, and strychnine and heroin cough mixture. Patient seemed to improve somewhat, although never strong enough to leave the hospital. On July 30 patient had a sinking spell, in which his mind frequently wandered, but he seemed to pick up again for a few days, after which he progressively weakened until death occurred, September 1, at 6.05 p. m.

NECROPSY (15 hours after death).—Rigor mortis and post-mortem lividity both slight. Body very much emaciated. Subcutaneous fat over abdomen, as revealed by median incision, very slight in amount. Position of abdominal contents normal. Pericardium contained 60 c. c. of straw-colored fluid. Heart weighed 240 grams, and contained both post and ante mortem clots. Its walls were thin and flabby, but its valves appeared to be normal. Pleural cavities contained small amount of fluid, and lungs were very adherent. Left lung weighed 1,150 grams, right 1,000 grams. Both present numerous millary tubercles and several large cavities in upper lobes. Peritoneum contained 150 c. c. of clear fluid. Liver apparently normal, weight 1,430 grams. Spleen much enlarged and of firm consistency, weight 270 grams. Mesentery shows many tubercles, and small intestines show numerous ulcers the size of a 10-cent piece, some of them extending around the entire circumference. The edges and base of the ulcer were thickened and indurated, and the floor presents caseous nodules. Kidneys each weigh 175 grams and are apparently normal. Suprarenal bodies greatly enlarged, weight of each 15 grams. Pancreas normal, weight 85 grams. Brain weighs 1,190 grams, and on section appears normal.

C. H. D.
W. C. R.
R. M. W.

Psoas abscess.

C. E.; colored; age, 30; nativity, Kentucky; admitted to United States Marine Hospital, Louisville, Ky., April 30, 1903; died August 29, 1903.

HISTORY.—Patient was operated on for a tubercular abscess pointing in right iliac region in December, 1902, at the Evansville marine hospital, staying there only three weeks after the operation. The wound discharged freely for a while, after which discharge stopped and he began to suffer a great deal of pain, lost his appetite, had chills, fever, and night sweats. About three weeks before admission it began discharging freely again.

PHYSICAL EXAMINATION.—Patient is a very black negro of medium stature. Very much emaciated; has a kyphotic curve in the lumbar spine. Two inches to the right of this is a small sinus, discharging slightly; the anterior opening is about an inch internal to the anterior superior spine of the ileum on the same side. Patient was placed on supportive treatment and sinuses irrigated daily. His temperature ran the course of a hectic fever and was usually 38° C. or over in the evenings. On July 17 a bulging of the left gluteal region was tapped and about 2 liters of greenish pus drained off. Temperature following operation, however, ranged much higher than before. On August 15 a severe diarrhea began, the stools containing quantities of bloody pus. That the pus came from the lumbar abscess, which had ruptured into the intestines, was proved by the injection of methylene blue solution into the anterior opening and its subsequent appearance in the stools. Diarrhea soon became uncontrollable, and in an effort to promote freer drainage a Treves operation was done, opening into the right psoas muscle from the outer edge of the erector spine. Although fairly free through-and-through drainage was secured by this, it made no difference in the amount of pus coming out with the stools. On August 27, after complaining of a severe headache for several days, patient became suddenly maniacal. Patient lingered on, dying at 3 p. m. on August 29, 1903.

NECROPSY (18 hours after death).—Body extremely emaciated, there being absolutely no subcutaneous or visceral fat. Heart small, contracted; valves normal; weight, 140 grams. Lungs contained no tubercular foci. The intestines were then removed to ascertain opening position of the abscess into them. This was found in the duodenum.

The original tubercular focus was in the body of the first lumbar vertebra, which was completely eroded, so that a probe was thrust through the slight remnant of necrotic material into the canal of the cord. From this original focus there was a pus tract on each side. That on the right followed the psoas muscle on the same side to the anterior superior spine. From this main tract there was a sinus leading into the lumbar region and an anterior one discharging through thick adhesions into the duodenum. On the left side the tract had followed the corresponding psoas muscle to its insertion into the lesser trochanter of the femur and had there spread out, baring the neck and a part of the shaft of the bone and forming a large pus cavity.

T. D. B.

Tubercular leptomeningitis.

W. B.; colored; age, 23; nativity, United States; admitted to United States Marine Hospital, Louisville, Ky., June 3, 1903; died July 23, 1903.

HISTORY.—Present illness begun two months ago with cough, pain in side, and general weakness. Applied at out-patient office about three weeks before admission to hospital, because of this pain in left side. Is lame in left hip, and right hip is tender, patient says because of lying on it. Patient is a very black negro, not very intelligent, of about medium height and weighing about 120 pounds. His face and chest show emaciation and his mucous membranes are pale. Percussion and palpation do not show consolidation, and no râles are heard, but the apical sounds were high pitched and bronchial. The skin over left trochanter is reddened and pressure over trochanter causes pain in joint. On admission patient's temperature ranged around 38° and 39° C.; it gradually approached normal in about three weeks and after staying so a few days rose again and continued febrile till death. About July 9 began to have nosebleed daily and to complain of severe headache, and temperature began to rise quite high. The epistaxis stopped in a few days, but the headaches continued and required daily doses of acetanilid to control; was very constipated about this time.

July 16.—About 8 a. m. was found by the nurse crying bitterly; on being questioned he would give no answer; ten minutes later he had a hard convulsion; never regained consciousness after convulsion; would turn head sometimes when spoken to, but would not answer questions, and would not take food, water, or medicines; also had to be catheterized for the first three days, after which he would pass his evacuations in bed; was fed through stomach tube three times daily, being given beef broth, eggs, and whisky.

July 18.—Had several right-sided convulsions yesterday and the right side of face was constantly twitching, the process seeming to be localized; preparations were made for a trephine to-day; however, as all convulsions and twitchings had stopped, and as patient seemed to be brighter, the operation was postponed.

July 20.—Had three hard convulsions to-day; began in face. Patient's pulse is holding up well, but the respiration is too rapid.

July 23.—Patient is failing rapidly, the focal symptoms, referable to the right side of face continue, and as a "dernier ressort" a trephine was performed. Patient's head was shaved several days previous, and on the scalp the fissures of Rolando and Silvius and the face center were outlined. Patient was chloroformed and the button of bone removed, and, as was suspected, tubercular meningitis was found. Several tubercles were seen on the pia; a probe was thrust a short distance in the brain substance to evacuate any abscess that there might be. Prior to this the sterilized electrodes of a galvanic battery were placed on brain substance directly under trephine opening and the spot proved to be the face center by connecting up the battery and causing the right side of face to twitch. Patient reacted from operation well as regards shock, but respiration continued very rapid, and both lungs were full of râles. Late in the afternoon a good deal of mucus began to form in his throat, which rapidly increasing, soon caused his death, at 11 p. m.

NECROPSY (12 hours after death).—Body male, black, much emaciated. Heart small, pale, all valves normal. Universal old adhesions bound left lung to pleura. Left lung partly hepatized in upper portion, completely so in lower portion; weight, 625 grams. Hepatization of the lower lobe of right lung; weight, 750 grams. Small millary tubercles scattered over the pleural surfaces of both lungs, but no evidence of more extensive process. A mass of caseating tubercular glands at the bifurcation of trachea and about the roots of lungs. Liver enlarged, and scattered throughout its substance were tubercles varying in size from a millet seed to that of a buckshot; weight of liver, 1,400 grams. Spleen enlarged and a mass of large caseating tubercles. Brain deeply congested, and tubercles scattered throughout the pia, not only on the base but also on the convexity.

T. D. B.

NECROPSIES OF PLAGUE CASES.

The following records of necropsies refer to plague cases which occurred in San Francisco, Cal., during the period from July, 1903, to February, 1904, since which latter month no cases have been reported. The diagnosis of plague in these cases was made provisionally from the necropsic findings and subsequently confirmed by bacteriologic investigation.

I.

C. J.; age, 62; male; death occurred July 14; necropsy July 15 by Asst. Surg. Donald H. Currie. Present: Passed Asst. Surg. Rupert Blue, Asst. Surgs. B. J. Lloyd and C. W. Vogel, Doctors Woolsey, Mathewson, Laughlin, Morrow, and Hopper.

NECROPSY.—Body that of a well-developed, well-nourished Chinese male about 50 years of age. The body has progressed to beginning putrefaction, so that it has probably been dead two or three days. Blebs putrefactive in character, for they were not present yesterday at 4 p. m. about the right inguino-femoral region. Post-mortem lividity well marked, the face being almost black. Sclerae very much injected. No signs of trauma. Blood exudes from nose and mouth. Long median incision made. Large quantities of gas escape from the peritoneal cavity when the latter is opened. Subcutaneous fat unusually well pre-

served. Incisions made over the right inguino-femoral region show neither œdema nor glandular enlargement. The same made over the left shows moderately enlarged hemorrhagic gland, which, when removed and the incision made crucial in shape, exposes another similar gland. Incision made in the right axillar region; tissues found to be somewhat moist and the glands similar to the others, only slightly smaller. Smears from gland show numerous organisms, among which are some taking a bipolar stain. Spleen removed without difficulty; enlarged to nearly twice its normal size, showing numerous pigmented areas. These are probably hemorrhages which have undergone post-mortem change. Organ very soft in consistency. Capsule tense, showing some nodules on its surface. Organ cuts very easily; cut surface shows the pulp to be confluent and bulging; of a dark red color, the darkness probably being post-mortem. Everywhere the tissues are found infiltrated with gas and fluids undergoing putrefactive change. Smear made from the spleen shows a number of round bodies, some with slightly clear centers, taking the stain very indistinctly and bearing some resemblance to doughnut types of *B. pestis*. Thorax opened by removal of sternum. Putrefactive gases escape. Lungs collapse anteriorly. Right lung extends two finger breadths beyond the cut border of the ribs. Left lung retracted behind the cut border of the ribs. Pleural cavity shows one adhesion of the pleura near the apex of the upper lobe of the left lung. Otherwise lung is free. Organ crepitates throughout. Odor emitted from the pleural cavity is hardly bearable. The lungs and heart are not removed from their cavities owing to the putrefactive state of these organs. Left kidney removed. Fatty capsule very rich. When removed shows the organ increased in size. Its original consistency can not be ascertained owing to the putrefactive changes. Cuts very easily. Characteristic appearances of its cut surface are lost, but in spite of this, from the color and general appearance of the organ, there is a possibility that it is a moderately large white kidney. Liver appears normal in size, very soft in consistency. Organ greenish black owing to post-mortem change. Incision through its substance shows that it has advanced so far that it is impossible to form any idea as to the original appearance. Intestines were probably about normal, except that at present they are distended with putrefactive gases. The enlarged glands mentioned are removed, together with a portion of the spleen, but a more complete autopsy than that described in the preceding notes is impossible owing to the condition of the cadaver.

PROVISIONAL ANATOMICAL DIAGNOSIS.—Acute polyadenitis; acute splenitis, possibly due to infection with a bipolar organism, the nature of which is to be ascertained by bacteriological examination. Another smear made from the spleen stained for a long time with carbothionin, and the organisms met with previously described bear a much stronger resemblance to the doughnut type of *B. pestis* than the preceding slide.

II.

P. S.; age, 35; male; died Southern Pacific Railroad Hospital, July 19; necropsy July 20 by Asst. Surg. B. J. Lloyd. Present: Passed Asst. Surg. Rupert Blue, Asst. Surgs. Donald H. Currie and C. W. Vogel, Doctors Woolsey, Dickie, Laughlin, Buckley, Hassler, Morrow, Hopper, Coffey, Gardner, Carson, and Schmitt.

NECROPSY.—Body that of a male about 32 years of age; Italian race. Body is fairly well nourished and fairly well developed. Rigor mortis is present and rather marked. Eyes are partially open; pupils are slightly dilated; there is slight injection only of the scleræ. Post-mortem lividity in dependent parts. No marks of violence. There are moderately enlarged lymph nodes in the left axilla. The tissues surrounding these are soft. More especially on the surface of the right arm and forearm, and to some extent on the sides of the chest and abdomen, there are a number of small dark red spots which are subcutaneous and apparently minute hemorrhages. The lymph nodes in the left inguino-femoral region are not palpable. In the right inguino-femoral region is a large mass surrounded by an area which superficially is soft in consistency but not fluctuating. Upon making deep pressure the tissues are firmer, and altogether this swelling is suggestive of enlarged lymph nodes surrounded by an area of inflammation, in which process œdema and infiltration are marked features. There is present over this mass a small preliminary incision. An extension of this incision reveals a number of enlarged lymph nodes, with hemorrhage into the surrounding tissues. Section of these nodes shows necrotic areas, and smears from them with the ordinary stains show doughnut-shaped

bacteria and also coco-bacilli which take a bipolar stain. Body is opened by long median incision. Subcutaneous fat is fairly well preserved. Abdominal muscles are apple red in color and moist. Abdominal cavity opened. The intestines are not distended. Omentum does not entirely cover intestines. The vessels of the intestinal walls are prominent. The peritoneum is smooth and glistening, and beyond injection of its vessels presents nothing unusual. Appendix is normal. Spleen is slightly adherent above and behind, but is removed without difficulty. The organ is enlarged, the capsule is tense, and there is an area of partially organized lymph corresponding in position to the adhesions mentioned. The surface is reddish in color, but uniformly distributed throughout are very small whitish areas, which are probably beginning subcapsular nodules. The organ is only fairly firm in consistency. Cuts easily. The cut surface is rich in blood, and is of a dark reddish color, marked by minute whitish points throughout. There is a slight bulging of the pulp. Just above Poupart's ligament, on the right side of the body, there are a number of enlarged lymph nodes in close proximity to those already described; further no nodular enlargement is noted. Sternum is removed. The lungs do not collapse completely when thorax is opened. The left lung is slightly adherent near the apex anteriorly. The right is apparently free. The pericardium is opened and is found to contain about 10 c. c. of pale straw-colored fluid. The pericardial surfaces are normal in appearance, except that the blood vessels are prominent and somewhat distended. There is considerable subpericardial fat. The heart is very slightly enlarged, if at all, and the left side of the heart, more especially the left ventricle, is firm and contracted. The left lung is removed; about normal in size. The pleura is smooth and glistening. The crepitation is diminished, more especially in the upper lobe and in the middle portion of the lower lobe. On section the cut surface is bright red in color, and upon pressure there is a thick, viscid, muco-serous exudate; but this is very small in amount and there is very little air present. The right lung is, perhaps, slightly enlarged, and there is hypercrepitation in the upper and what there is represented of the middle lobe. In the lower lobe crepitation is diminished. Upon section the upper lobe of the right lung is dark in color, oedematous; pressure causes serum mixed with blood and a large quantity of air to exude; presents contrast to the condition of the corresponding lung on the opposite side. In the lower lobe pressure causes a dark fluid to exude mixed with a small quantity of air. This fluid is viscid in character and approaches the type of fluid which exuded from the upper lobe of the left lung, but is darker in color. Heart is removed. The right ventricle contains a considerable quantity of fluid blood and a few small post-mortem clots. The left ventricle is empty. There is a small mixed clot in the left auricle. The semilunar valves of the aorta present nothing beyond possibly slight roughening. The mitral valve is apparently normal. The left kidney is removed. The fatty capsule is fairly rich in fat. The organ is slightly enlarged, firm in consistency. The surface is of a reddish color. The capsule strips readily. The organ cuts easily. The relation between the cortex and the pyramids is well retained. The cortex is swollen and oedematous, presenting the appearance of boiled flesh. Right kidney removed. Presents about the same general appearance as the left; is even a better picture of a cloudy, swollen organ than is the left. The liver is examined *in situ*. The cut surface is of a light reddish color, poor in blood, presenting the appearance of a cloudy swelling.

ANATOMICAL CONDITIONS NOTED.—Congestion throughout the greater part of the left lung marked in character, the air vesicles being filled with a viscid, muco-serous exudate, but containing air, the organ not consolidated. The upper and middle lobes of the right lung are in a condition of emphysema. Lower lobe presents practically the same appearance as the left lung except that the exudate is of a darker color and the fluid is, perhaps, slightly more viscid in character. There is cloudy swelling of the kidneys and of the liver; pulpitis of the spleen; polyadenitis with primary bubo in the right inguino-femoral region. Cause of death to be determined by bacteriological examination.

III.

P. B.; age, 62; female; died 19 Jasper place; necropsy, July 21, by Asst. Surg. Donald H. Currie. Present: Passed Asst. Surg. Rupert Blue, Asst. Surgs. B. J. Lloyd and C. W. Vogel, Doctors Woolsey, Dickle, Mathewson, Laughlin, O'Brien, Hopper, Morrow, and Schmitt.

NECROPSY.—Body that of a poorly developed, fairly well-nourished Italian female about 70 years of age. Rigor mortis well marked. Post-mortem lividity slight. Numerous petechial hemorrhages scattered over lower and upper extremities. Quite general oedema of a moderate extent. Pupils midway between dilatation and contraction; scleræ slightly injected, showing no hemorrhages. A mass of glands palpable in the right femoral region extending into the inguinal region. Another mass just under the angle of the inferior maxilla (right side). No glandular enlargement palpable in either axilla. No signs of trauma. Incision made in the right inguino-femoral region, crucial in shape. Subcutaneous fat unusually well preserved. Flap dissected back in this incision, exposing a mass of glands. There is very little surrounding oedema of the tissues, possibly a slight increase above the normal moisture. Glands are dissected out en masse, together with the adipose tissue, and the mass incised, exposing a gland enlarged to four times its normal size, injected, hemorrhagic, necrotic. Incision is next made over the cervical glands mentioned. Here a mass of swollen, injected, partially necrotic glands is found very similar in appearance, but larger in size, than those in the inguino-femoral region. This swelling is found to consist of numerous moderately enlarged glands, together with infiltration in the surrounding muscular and connective tissue. A chain of enlarged lymphatics is followed forward almost to median line. Long median incision made. Subcutaneous fat well preserved. Abdominal muscles very poorly developed and of a lightish red color, moderately moist. Smear made from the first gland incised in the inguino-femoral region stained with carbothionin shows a doughnut-shaped organism, also a few bipolar bacilli. Peritoneal cavity opened. Intestines moderately distended, bulge through the abdominal incision. Peritoneal coats moist, glistening, very slightly injected, although the general appearance is pale. The liver is visible for three finger breadths in the median line and one and one-half in the umbilico-mammary line. The peritoneal cavity is very moist throughout. In the pelvis there are found possibly 10 c. c. of clear serum. In the posterior abdominal region in line with the inflamed glands incision is made into the muscles, but contrary to the rule in such cases, no chain of inflamed lymphatics extend upward in this region. The spleen is removed without difficulty, being nowhere adherent. The organ is found to be enlarged (taking into consideration the age and appearance of the woman) possibly three times its normal size. It is very soft in consistency. Its capsules show many areas of irregular thickening, together with numerous white nodules resembling those met with in these cases. Capsule is slightly wrinkled. Organ cuts very easily. The pulp flows; almost completely disintegrated. The fatty capsule surrounding the left kidney is unusually rich, interfering in the removal of the organ. This when removed shows an organ about normal in size, possibly slightly increased (considering the age of the patient), and very soft in consistency. The superficial blood vessels over the capsule are dilated. The fibrous capsule strips with difficulty, being adherent in many places. The breaking up of these adhesions causes tearing of the substance of the organ. This when removed exposes a granular, yellowish red surface, in which the stellate veins are very prominent. Organ cuts easily, but with slight grate. Its cut surface is moderately rich in blood. Contrast between cortex and pyramids is lost in areas or very much diminished. The cortical border is probably about two-thirds the original breadth. The organ has a general whitish light yellowish color, with numerous small reddish dots scattered over its surface; probably represents an old interstitial nephritis on which an acute cloudy swelling has been engrafted. Thorax is opened by removal of sternum. The costal cartilages show very little ossification, considering the age of the cadaver. The lungs almost meet in the median line, only partially collapse anteriorly, and are not adherent anteriorly. The left lung is removed easily, not being adherent in any portion of the pleural cavity. Spleen shows a coccobacillus taking the bipolar stain. The lower lobe almost completely collapses in its central two-thirds. The pleura of this lobe has lost some of its glistening, shows numerous subpleural hemorrhages, does not crepitate, is very firm in consistency. Cuts with slight resistance. Its cut surface shows lobular pneumoula involving the whole lower half of the upper lobe. About a third of this lobe situated about the apex is not involved. The lower lobe crepitates fairly well throughout, though less so than the normal lung. It does not pit on pressure. Its pleura shows the subcapsular hemorrhage noted in the other lobe, but the luster is retained. Incises easily; cut surface rich in blood, pressure causing blood, air, and serum to exude, the blood being in rather larger than normal proportion, the condition being hypostasis. The pericardial sac is

surrounded by fat; opened, found to contain a small amount of blood-stained fluid. The heart itself shows a considerable enlargement, probably a third above the normal, compared with the fist of the individual. It is surrounded by a heavy layer of fat which shows a deep lemon color. The apex of this organ is formed almost altogether by the left ventricle. The right ventricle is opened and found almost empty, the exception being a small amount of fluid blood. The right auricle is opened; contains a few dark clots and moderate amount of fluid blood only. The left ventricle opened, contains post-mortem clots, one small white clot, and fluid blood. Smears from the lungs show *cocco-bacillus* taking a bipolar stain and a doughnut-shaped organism. Left auriculo-ventricular opening admits two gloved fingers easily and another with difficulty and slight stretching. Right auriculo-ventricular opening admits five gloved fingers easily. Heart opened throughout and washed. There is one rather large hemorrhage situated just below the aortic valve, being about one-half inch long and one-eighth inch in width. The mitral valve shows a diffuse, uniform thickening throughout, the finger not being visible through it. This, taken in connection with the fact that only two fingers passed through its orifice, is probably stenosis. The aortic valves show a very slight thickening, no adhesions or contractions. The aortic surface is stained a deep yellow, shows very few irregularities, these being confined to two or three plaques a pin head in size and very slightly raised. Other than that already described, the endocardium itself appears transparent and normal. Heart muscle shows neither fatty nor fibroid change and there is a fair degree of thickness and consistency. The right lung is removed from its cavity easily, being nowhere adherent. Its upper and middle lobes pit on pressure; the lower lobe does not pit and does not completely collapse, there being rather a firm central area in this latter lobe. The upper lobe crepitates fairly well throughout, except about its lower third, where there is a long, narrow, centrally located area of increased consistency. The upper lobe cuts rather easily; its cut surface is rich in blood and deeply blood-stained. The centrally located firm area mentioned is devoid of air, and represents an early stage of the same pneumonic process of the opposite lung, differing only in color and friability. Sinks when thrown into fluid. The lower lobe incised; its cut surface is found to be deeply injected and rich in blood. A large nodule, about as large as the last joint of the thumb, springs up mushroom-like, being raised above the surrounding surface in the form of a flat, circular plaque. This is incised through crosswise and at right angles to the original incision, and an area of pneumonia in the stage met with in the left lung, as determined by its color and friability, is met with. Liver removed. Probably slight increase above the normal size, which supposition is carried out by the rounding of the lower border. The organ is of a chocolate brown color mixed with areas of lighter yellow and areas of a brownish purple; is very soft in consistency. Capsule very transparent and smooth. Cuts easily; cut surface is moderately rich in blood and friable. The connective tissue shows up rather more prominently than normal and there is possibly some cloudy change. Except for the general anæmic appearance, the intestines point to nothing abnormal so far as external examination would show, and are not opened. The mesenteric glands are not enlarged.

ANATOMICAL DIAGNOSIS.—Pneumonia, acute lobular; acute polyadenitis; mitral stenosis; acute pulpitis of spleen; chronic interstitial nephritis, acute cloudy swelling; cloudy swelling of liver; the adenitis, the pulpitis and the pneumonic process due to infection with a bipolar bacillus, the nature of which is to be determined by bacteriological examination. The pneumonic process is lobular in character and, owing to the necrotic appearance of the glands on the one hand and the comparatively recent appearance of the pneumonia, even that of the left lung, on the other, it is thought that the adenitis is primary and the pneumonia is secondary.

IV.

Y. K. J.; age, 44; male; died 722 Jackson street; death occurred 9 a. m., July 29; necropsy same day by Asst. Surg. B. J. Lloyd. Present: Passed Assistant Surgeon Blue, Assistant Surgeons Currie and Vogel, Doctors Morrow, Hopper, Woolsey, Laughlin, Dickie, and Mathewson.

NECROPSY.—Body that of Chinese male about 40 years of age, fairly well nourished, moderately well developed. Post-mortem rigidity present; thumbs flexed on palm and fingers flexed over thumbs. Lividity independent parts. Pupils slightly contracted, sclere somewhat injected. No marks of violence, no nodular enlargement in the right axilla or right inguinal region. In the left

axilla there is slight enlargement of the nodes. In the left inguino-femoral region there is a swelling about $3\frac{1}{2}$ inches long by 2 inches broad, and over this region, which is oedematous, there are a number of well-marked petechial hemorrhages. Petechiæ are also present on the skin of the forearms, chest, abdomen, and lower limbs. An incision is made into the swollen tissues. The lymphatics in both the inguinal and femoral regions are enlarged, the individual nodes being from two to several times as large as normal; the tissues composing them are hemorrhagic, and are beginning to be necrotic. There are well-marked hemorrhages into the tissues surrounding the lymph nodes, extending well into the muscles. Smears made from one of the enlarged nodes and stained with carbothionin shows a *cocco-bacillus* taking a bipolar stain morphologically indistinguishable from *B. pestis*. Body is opened by a long median incision. Subcutaneous fat well preserved. Abdominal muscles are red in color and moist. Abdominal cavity opened. There is considerable exudate in the peritoneal cavity, serous in character. The peritoneum is normal in appearance except that its vessels are unduly prominent. Omentum is fairly rich in fat; does not completely cover the intestines. Appendix normal. The tissues of the mesocolon are hemorrhagic. The spleen is removed without difficulty, is somewhat enlarged, and the capsule is fairly tense. On the posterior surface are a number of flaky deposits of lymph; several similar whitish patches are seen beneath the fibrous capsule. The surface is of a light bluish color fading into pink. The organ cuts easily. The cut surface is rich in blood, dark in color, the pulp bulging, the Malpighian corpuscles prominent as whitish spots. Smears from the cut surface stained with thionin show *cocco-bacilli*, some of which are bipolar as in the lymph nodes. Sternum is removed. The left lung is visible for about one finger-breadth beyond the cut border of the cartilages. Right lung about the same. Pericardium is opened; the cavity contains about 35 c. c. of a pale straw-colored fluid. Left lung is removed; about normal in size; crepitates throughout; cuts fairly easily; cut surface is poor in blood. Pressure causes small quantities of blood and serum and the usual quantity of air to exude. Right lung is removed; normal in size; cuts fairly easily, and presents about the same general appearance as the left. Left kidney removed; slightly enlarged. Fatty capsule abundant. Fibrous capsule strips off easily. Surface of kidney pinkish in color. Organ cuts easily; cut surface drips blood. Relation between cortex and pyramids well retained. After pressing out the excess of blood the tissues have the appearance of boiled flesh. Right kidney removed; is smaller than its fellow; fibrous capsule strips readily; organ cuts easily; presents same appearance as that of the left. The heart is removed. Subpericardial fat abundant. Hemorrhages are present, especially in the wall of the left ventricle. Organ is firm in consistency. Left ventricle contracted. Right ventricle contains a small amount of semicoagulated blood. The valves are normal in appearance. The heart muscle has the appearance of boiled flesh. Liver removed; is uniformly enlarged; margins rounded, but well defined. Organ cuts easily. Cut surface is poor in blood and of a light yellowish color with reddish tint.

ANATOMICAL CONDITIONS NOTED.—Polyadenitis; hemorrhagic septicæmia due to infection by an organism morphologically identical with *B. pestis*; cloudy swelling of the heart, liver, and kidneys; acute pulpitis of the spleen, hydro-pericardium and hydro-peritoneum. Cause of death awaiting bacteriological investigation.

PROVISIONAL DIAGNOSIS.—Bubonic plague.

V.

C. B.; age, 33; male; died at German Hospital.

NECROPSY.—Strongly built, well nourished, middle-aged man; marked cyanosis of face, upper half of trunk, and upper extremities; numerous small hemorrhages in skin in upper part of both arms, on right side of thorax, and over abdomen. Hemorrhages vary in size, the largest ones about 3 mm. in diameter. Moderate oedema of subcutaneous fatty tissue over chest. Muscle normal. Loose areolar tissue back of pectoralis major muscle on right side very oedematous and full of small hemorrhages. Small hemorrhages in the capsule of the liver, especially along the free margin. Some adhesions between omentum and anterior abdominal wall. Few drops of blood-stained fluid in recto-vesical pouch. Appendix normal. Strong adhesions between liver and diaphragm. Diaphragm on right side, fourth rib; on left side, fifth rib. Chest well formed; all muscles on right side of thorax oedematous. Hemorrhage about size of silver dollar in the lower

part of mediastinum. Tablespoonful of blood-stained fluid in left pleural cavity. Strong adhesions. Cupful of blood-stained fluid in pericardial cavity. Few hemorrhages in visceral layer of pericardium; more in parietal layer. Post-mortem clot in pulmonary artery. Heart normal in size and form. Endocardium diffusely stained with hemaglobin. Valves, aorta, coronary arteries and heart muscle normal. Easily broken adhesions in upper part of left pleura. Left lung: A superficial scar a little below apex, pulmonary tissue oedematous and hyperæmic. Bronchial tubes filled with blood-stained fluid. Right lung: Adhesions easily broken, except those between diaphragm and lung—these are strong. Right lung same condition as left, even more oedematous. Peribronchial lymph glands on both sides normal. Spleen enlarged— $18\frac{1}{2}$ by $13\frac{1}{2}$ by 7 cm. Easily broken adhesions between upper surface and diaphragm. Cut surface is dark red, opaque, full of grayish-white opaque spots about 1 mm. in diameter. The spots vary in diameter from those scarcely visible to above size, fairly regular in outline. Left adrenum small, otherwise normal; loose fatty tissue around kidney is oedematous; part of adrenal is directly attached to upper pole of kidney. A few large hemorrhages in the superficial layers over capsule. Left kidney $13\frac{1}{2}$ by 6 by 3 cm. Cortex is swollen, little opaque. Numerous hemorrhages in fatty tissue around renal pelvis, and also in mucous membrane of calyces, not in renal pelvis itself. No visible nodules in kidney. Right kidney and adrenal exactly same as left. Glomeruli in both kidneys hyperæmic. Testicles cyanotic, little oedematous, otherwise normal. Considerable number of small hemorrhages in peritoneum. Blood-stained urine, tablespoonful, in bladder containing hemorrhagic flakes floating in it. Mucous membrane of bladder cyanotic; no hemorrhages. Many small hemorrhages in mucous membrane of rectum. Stomach contains little dark-brown mucous and few remnants of undigested food. Mucous membrane full of hemorrhages, the largest about 3 mm. in diameter. Rest of mucous membrane is swollen and opaque. Loose connective tissue around head of pancreas shows diffuse hemorrhagic infiltration. No thrombosis in vessels. Bile duct is open. Gall-bladder shows hemorrhagic infiltration of wall at apex of bladder. Mucous membrane and contents normal. Liver large— $25\frac{1}{2}$ by $24\frac{1}{2}$ by $6\frac{1}{2}$ cm. Some hemorrhages in the adhesions between liver and diaphragm. Cut surface opaque, light brown, shows few small irregular opaque spots. Large hemorrhage near the hylus of liver, extending along the loose connective tissue around portal vein to the connective tissue accompanying the larger branches of the portal into the liver substance. No visible changes in the veins themselves. Hemorrhagic infiltration behind the right pectoral muscle extends into pectoralis minor. That muscle shows diffuse infiltration. Some of the vessels that pass through and underneath are filled with red clots, which adhere to the wall of the blood vessel. Lymph glands in right axilla moderately enlarged, hyperæmic, oedematous, and full of hemorrhages. Slight enlargement and congestion of femoral glands on both sides. Moderate enlargement and hyperæmia of lymph glands of right side of neck. Hemorrhagic infiltration of loose connective tissue and muscle above right clavicle. Tonsils, both sides, slightly enlarged; right one shows small hemorrhage at upper half; the left one shows hemorrhage at lower half. Small hemorrhages in mucous membrane of the base of tongue, on left side. Post-mortem softening of lower third of esophagus. The mucous membrane of lower part of larynx very hyperæmic; shows small hemorrhages. Mucous membrane of trachea very much roughened, covered in places with thin grayish-white pseudo-membrane; the membrane is quite superficial in most places. Aorta normal. Thyroid normal; lymph glands of mesentery slightly enlarged, showing hyperæmia. Numerous hemorrhages in mucous membrane of ileum, especially in Peyer's patches. Solitary (lymph glands) follicles in lowest part of ileum are considerably swollen, about size of millet seed, grayish white in color, rather opaque. Many small hemorrhages in the mucous membrane of the large intestine, which is otherwise normal.

DIAGNOSIS.—Ulcerated pseudo-membranous inflammation of trachea; inflammatory enlargement of spleen, with numerous necroses; parenchymatous degeneration of kidneys and liver; congenital misplacement of adrenals; hemorrhagic septicæmia; hyperæmia and oedema of both lungs; old scar at left apex; adhesions in both pleural cavities; perihepatitis, chronica ad hæciva.

VI.

W. C. C.; age, 44; male; died 735 Commercial street; death occurred 7 a. m. August 21; necropsy same day by Asst. Surg. B. J. Lloyd. Present: Passed

Asst. Surg. Rupert Blue, Assistant Surgeon Vogel, Doctors Morrow, O'Brien, Hopper, Dickie, Mathewson, O'Neill, and Laughlin.

NECROPSY.—Body that of a Chinese male about 38 years of age, moderately well nourished, fairly well developed. Post-mortem rigidity is present and not very easily broken up. There is no injection of the sclerae. The pupils are midway between dilatation and contraction. There is sordes on the teeth; a small area of the mucous membrane of the lower lip is almost abraded. Post-mortem lividity is slight. On the chest wall opposite the lower margin of the ribs are two dark-colored areas about 2½ inches long by one-fourth of an inch broad that are apparently the result of a form of counter irritation known as Chinese "black san treatment." Upon the right arm and forearm, and to a less degree upon the left arm, are a number of ecchymoses. Two similar areas are noted a little below the internal condyle of both lower limbs. There is no nodular enlargement in the left axilla nor in the inguinal or femoral regions. The right axillary region is bulging; the tissues composing the swelling in this region are firm on deep pressure, but superficially they are oedematous. On making an incision into this apparently swollen mass there is considerable fat; the tissues are blood stained, but the general appearance suggests more a post-mortem infiltration; upon deeper section several moderately enlarged nodes are revealed. The tissues surrounding these are hemorrhagic, and the parenchyma of the nodes removed is necrotic. Smears from these necrotic areas stained with carbo-thionin show cocco-bacilli and doughnut-shaped bacteria. Body is opened by a long median incision. There is considerable fat in the subcutaneous tissues; muscles are dry, red in color. The omentum forms an apron, covering about two-thirds of the exposed intestines. The liver is barely visible below the costal borders. The intestines are normal in appearance; the colon is slightly distended; the appendix points downward and to the right. Spleen is removed, is uniformly enlarged, of a statish color, fading into pink; the capsule is slightly wrinkled, but as a matter of fact is fairly well filled with tissue substance, the organ being considerably enlarged; it is soft in consistency; cuts easily; cut surface is rather poor in blood; pulp is slightly bulging and very soft. There is a slight increase in the connective tissue. The lungs collapse on removal of the sternum. The left lung is removed; crepitates throughout; the lower lobe is slightly enlarged and crepitation is diminished; the pleural surfaces are normal in appearance; the organ cuts fairly easily; the cut surface in the upper lobe of the lung is pale red in color; pressure causes air, serum, and a small amount of blood to exude; in the lower lobe the cut surface is darker in color, is oedematous; pressure causes serum, blood, and air to exude. The right lung is removed; is about normal in size; crepitates throughout; the lung, especially the lower lobe, is oedematous; the cut surface presents about the same appearance as that of the left. Left kidney is removed; Organ is slightly enlarged; capsule strips readily. The surface exposed by removing the capsule is of a light pink color, with areas of a deeper red; organ cuts fairly easily. The relation between the cortex and the pyramids is well retained. The cortex is swollen and is of a light pinkish-yellow color. Left kidney removed; there are a number of small hemorrhages beneath the capsule of this organ, otherwise organ presents about the same general appearance as the left, being typically cloudy swollen. Pericardium is opened; cavity contains a small quantity of fluid; the veins of the heart are somewhat tortuous; subpericardial fat, moderate in amount. Heart is removed; is firm in consistency; the left ventricle is empty; the left auricle contains a small post-mortem clot; the valves of the heart are normal in appearance; the heart muscle is cloudy swollen; the right ventricle contains a few post-mortem clots; the right auricle contains a large post-mortem clot. The liver is enlarged; cuts easily and is moderately rich in blood; cut surface is yellowish red in color and presents the appearance of cloudy swelling. Stomach and intestines not examined. Anatomical conditions noted: Terminal oedema of the lungs; cloudy swelling of the heart muscle, liver, and kidneys; acute pulpitis of the spleen, with slight increase of its connective tissue; petechial hemorrhages, subcutaneous and visceral; an adenitis not very marked in character, confined to the lymph nodes in the right axilla; septicæmia due to infiltration by a cocco-bacillus morphologically resembling *B. pestis*.

VII.

E. T. S.; male; died Southern Pacific Hospital; death occurred September 13; necropsy September 14 by Asst. Surg. B. J. Lloyd. Present: Passed Asst. Surgs. Rupert Blue and M. J. White, Asst. Surgs. Donald H. Currie and C. W. Vogel.

Doctors Morrow, Hopper, Woolsey, Ellis, Schmitt, McCarthy, Hamilton, Blue, Mathewson, Rosson, and Thompson.

NECROPSY.—Body that of a fairly well-developed, well-nourished male; American; about 38 years of age. Post-mortem lividity is present, rather marked; post-mortem rigidity well marked in the upper and lower limbs, including marked contractions of the muscles of the extremities. Sclerae are injected; pupils are slightly dilated. There is a blood-stained discharge from the nose; lips are blue. There are petechial hemorrhages in the skin over the side of the chest, extending into the axillary region on the left side. There are no marks of violence; there is some enlargement of the lymph nodes in the axillary and inguino-femoral regions on the left side. There has been a preliminary incision over a mass of enlarged glands in the left axilla, and smears from the gland removed show an organism which morphologically has the appearance of *B. pestis*. Examination of the structures revealed by this incision shows enlarged lymph nodes, the tissues surrounding these nodes being oedematous and hemorrhagic. One of these lymph nodes is removed, and upon section shows beginning necrotic areas, with cortical injection. An incision is made into the left femoral region, and an enlarged lymph node about two-thirds the size of the last joint of the little finger is removed. This node is incised; presents cortical injection. Incision into the right femoral region reveals a number of enlarged lymph nodes which have the same appearance as the other nodes removed. Body is opened by a long median incision. The subcutaneous fat is moderate in amount. The muscles of the chest and abdominal wall are red in color and moist. Abdominal cavity is opened; the omentum almost entirely covers the intestines; intestines do not protrude through the incision. Stomach is distended with gas. On laying back the omentum the intestines are seen to have lost their glistening appearance, but not entirely. The vessels of the intestinal wall and of the mesentery are prominent; the mesenteric lymph nodes are enlarged throughout the greater part of the length of the small intestine. Appendix is normal in appearance and points downward into the pelvis. The arch of the diaphragm on the right side is fourth interspace; left fifth rib. Spleen is easily removed; capsule tears on removal; organ is enlarged; capsule is tense. The surface of the spleen is of a light bluish color, fading into pink. Beneath the capsule are a number of small hemorrhages. Organ cuts fairly easily; the cut surface is red in color; fairly rich in blood. The pulp of the spleen bulges. The tissue is soft and friable, the condition being an acute pulpitis. Sternum is removed; the lungs do not entirely collapse. The right lung presents for about two finger breadths beyond the cut border; the left lung is barely visible. Pericardial area is somewhat increased in size. Pericardium is opened. There are about 4 ounces of a blood-stained fluid in the pericardium. There are pleuritic adhesions on the left side extending posteriorly, and also to some extent on to the diaphragm. In the left pleural cavity is a small quantity of blood-stained fluid. The right lung is free from adhesions. Left lung is removed; is slightly enlarged; there is some thickening of the pleura; organ is fairly firm in consistency, but crepitates throughout, crepitation being somewhat diminished in the lower lobe. The organ cuts fairly easily; cut surface is fairly rich in blood. Pressure causes serum, mixed with blood and a small quantity of air, to exude. The organ is oedematous. A portion of the lung when placed in water floats. The right lung is removed. Organ crepitates throughout. On section the lung is only fairly rich in blood; pressure causes a muco-serous, blood-stained fluid and air to exude. Left kidney is removed; fatty capsule is abundant. The organ is very much enlarged. The surface of the kidney is pink in color; beneath the capsule are a number of small hemorrhages. The fibrous capsule strips readily, exposing a surface which is red or pinkish in color, and presenting both the appearance of capillary injection (judging from the color) and hemorrhagic areas. Organ cuts easily; cut surface light red in color. The contrast between the pyramids and the cortex is very well retained. Cortex is swollen and the organ generally has the appearance of boiled flesh, the condition being that of cloudy swelling, with perhaps degenerative changes. The right kidney is removed; presents large hemorrhages under the capsule. Organ is about the same size as the left. The capsule strips readily. Organ cuts easily. Presents the same general appearance as that of the left kidney. Heart is removed; is about normal in size. The superficial vessels are prominent. Subpericardial fat is moderate in amount. Right ventricle is opened; contains fluid blood. The tricuspid orifice admits two gloved fingers. The left ventricle is opened and contains a quantity of semicoagulated blood. The auricles contain post-mortem clots. The

aortic valves are normal in appearance. The heart muscle is pale red in color. Liver is slightly enlarged. The margins of the organ are clear-cut; it is fairly soft in consistency. The gall bladder is distended; there are no evidences of anything but bile in the gall-bladder. The surface of the liver is pale and there are discolored areas corresponding to the impressions of the ribs. These areas are dark red in color, and are almost ecchymotic in character. Organ cuts easily; the cut surface is pale yellowish in color, is poor in blood; there is no increase in the connective tissue. The stomach and the pancreas are not removed.

ANATOMICAL CONDITIONS NOTED: Polyadenitis, the lymph nodes showing necrotic areas and cortical hemorrhages; an acute myocarditis; acute pulpitis of the spleen; cloudy swelling of the kidneys; acute fatty degeneration of the liver. Septicæmia due to the presence of an organism morphologically indistinguishable from *B. pestis*.

CAUSE OF DEATH.—Bubonic plague (provisional diagnosis).

VIII.

K. I.; age, 26; male; died 505 Dupont street; death occurred October 7; necropsy October 9 by Asst. Surg. B. J. Lloyd. Present: Passed Asst. Surg. Rupert Blue, Drs. Howard Morrow, William C. Hopper, Carleton Mathewson, and Chester H. Woolsey.

NECROPSY.—Body that of a Japanese male about 33 years of age; fairly well developed, moderately well nourished. Post-mortem rigidity has passed away, except for a very slight stiffening in the lower extremities. Post-mortem lividity is present and is peculiar in that the courses of the superficial veins are very clearly mapped out over the greater part of the entire body. There are moderately enlarged lymph nodes in the left axilla; and to a very slight extent in the right. There is a slight nodular enlargement in the right femoral and inguinal regions and also the left. On the side of the chest, upon the right side of the body, the epidermis is peeled off in three patches about the size of a dollar. Pupils are midway between dilatation and contraction; scleræ are not injected. Lips have a bluish discoloration; slight discharge from the mouth, mucous in character. Incision is made into the left axilla. Tissues here are moist. An enlarged lymph node is removed. The surface of this node is reddish, substance is soft; fairly rich in blood. Smears made from this node show organisms morphologically identical with *B. pestis*. Incision is made into the right axilla, and similar enlarged lymph nodes are revealed. The lymph nodes in the inguinal regions are very small. Body is opened by a long median incision. Subcutaneous fat is moderate in amount. Abdominal muscles are bright red in color, moist. The intestines do not protrude through the incision. The omentum almost completely covers the intestines. The stomach is somewhat distended with gas and is visible for about a hand's breadth in the median line. The arch of the diaphragm on the right side is opposite the fifth rib; on the left side is opposite the sixth interspace. The appendix is normal; points downward; curved upon itself. Spleen is removed; is enlarged; capsule is tense; surface is of a uniform pinkish color. The consistency is soft. Organ cuts very easily; cut surface is bright red in color and there is bulging of the pulp. Sternum is removed. The right lung is rather unduly prominent. The lungs do not quite meet in median line. There is a blood-stained fluid in both pleural cavities. The pericardial area is increased in size. The heart, as felt through the pericardial sac, is soft and flabby. On opening the pericardium we find about 30 c. c. of blood-stained serum. The vessels are tortuous. Beneath the capsule over the lower portion of the right ventricle and also on the posterior wall of the left ventricle are a number of very small hemorrhages. The right ventricle is opened; contains post-mortem clot. The left ventricle is opened; contains both fluid blood and post-mortem clots. There are enlarged lymph nodes in the mesentery. The left lung is removed. The organ is a little larger than normal; it is œdematous; pits on pressure. The pleural surfaces are slightly roughened. Crepitation is well marked over the upper lobe. It is also present in the lower lobe, but somewhat diminished, especially near the central portion. The organ cuts easily; the cut surface is rich in blood and is of a reddish color, which color, however, is broken by a number of areas of lighter appearance. Pressure causes large quantities of blood and serum and a diminished quantity of air to exude. The right lung is removed. Organ is heavier than normal; crepitates throughout; pits on pressure. Pleural surfaces are slightly roughened. The cut surface of this organ

presents about the same general appearance as that described in the left. The left kidney is removed. The organ is somewhat enlarged; fatty capsule not very abundant. There are several small hemorrhages beneath the capsule. Capsule strips fairly easily, exposing a surface which is pale yellowish, almost whitish, in color. The contrast between the cortex and the pyramids is fairly well retained. The pyramids stand out prominently and are injected. Right kidney is removed; is enlarged. There are a few subcapsular hemorrhages. The contrast between the cortex and the pyramids is only fairly well retained. The cortical border is whitish, somewhat mottled, in appearance, and the pyramids are prominent. The liver is slightly enlarged. Its margins are somewhat rounded. The surface is pinkish in color, with areas of a darker hue. The organ is soft; cuts fairly easily; cut surface is pale yellowish in color, presenting the appearance of boiled flesh. The heart is removed by severing the vessels. Its cavity is laid open. The valves are fairly normal in appearance. The heart muscle is pale red in color.

ANATOMICAL CONDITIONS NOTED.—Acute myocarditis, with hydropericardium; terminal œdema of the lungs; acute pulpitis of the spleen; cloudy swelling of the liver; acute parenchymatous degeneration of the kidneys; polyadenitis; septicæmia due to infection with an organism morphologically identical with *B. pestis*, which organism is associated with a diplococcus.

IX.

J. M. T. S.; age, 23; female; died 30 Fish alley; death occurred 3.30 p. m. October 20, 1903; necropsy October 21 by Asst. Surg. B. J. Lloyd. Present: Passed Asst. Surg. Rupert Blue, Asst. Surg. Donald H. Currie, Doctors Howard Morrow, William C. Hopper, W. M. Dickie, Carleton Mathewson, and Arthur A. O'Neill.

NECROPSY.—Body that of a Chinese female about 23 years of age; fairly well developed, well nourished. The lymph nodes in the axillary and inguino-femoral regions can be made out on palpation. Post-mortem lividity is present, but slight. Rigor mortis present in the lower extremities. Pupils are slightly dilated. The teeth are covered with sordes, and the lips have a brownish discoloration. There are no petechiæ present. Abdomen is slightly distended. An incision is made into the right axillary region, and a small lymph node is removed. The tissues in the immediate vicinity are moist but not œdematous. This node is of an ordinary flesh color. Cut section is normal in appearance. Smears made from the cut surface stained with carbo-thionin show a few organisms which morphologically resemble *B. pestis*. Body is opened by a median incision. The subcutaneous fat is unusually large in amount for one of this race. The abdominal muscles are red in color and moist. Intestines bulge slightly through the opening. The omentum does not cover the intestines; is quite rich in fat. The intestines are normal in appearance; have not lost their glistening. Appendix points toward the pelvis, is quite long, and except for the prominence of its vessels there is nothing unusual in its appearance. On the right side the arch of the diaphragm is at the level of the fifth rib; left, fifth interspace. Spleen is removed. The organ is almost pink in color, is uniformly enlarged, and the lower border presents four distinct notches. It is soft, cuts easily; the cut surface is very dark in color, quite rich in blood. There is bulging of the pulp and the organ is somewhat friable. Smears made from the spleen show a diplococcus and a coccobacillus morphologically identical with *B. pestis*. Sternum is removed. The lungs do not collapse. The right is visible for barely two finger breadths beyond the cut border. The left is just visible. The pericardial area is slightly increased in size. The vessels on the external surface of the pericardium are rather prominent. There are no adhesions of the pleuræ. Pericardial sac is opened; contains about 30 c. c. of a pale straw-colored fluid. The subpericardial fat is fairly abundant. There are one or two small bright red spots under the surface of the pericardium, which are apparently small hemorrhages. The substance of the heart is not very firm in consistency. The heart is removed; is slightly enlarged. The apex is formed almost entirely of the left ventricle. The right ventricle is opened and contains fluid blood. Left ventricle opened; is found to contain a small quantity of fluid blood. The aortic and mitral valves are normal in appearance. The surface of the endocardium is smooth. The heart muscle has the appearance of boiled flesh. The left lung is removed. The organ is perhaps slightly enlarged and is somewhat œdematous; crepitates throughout. The vessels of the lung underneath the pleura are prominent; the pleura is glistening.

Organ cuts fairly easily; cut surface is rich in blood. Pressure causes a large quantity of serum, mixed with some blood and air to exude. Left lung is removed; crepitates throughout, but crepitation is diminished in the lower lobe. The cut surface is very dark in color. Large quantities of serum pour out of the vesicles, and the amount of air contained is less than normal. A portion of the lung excised just floats when placed in water. Smears from the lung stained with carbo-thionin show organisms resembling *B. pestis*. Left kidney is removed. The fibrous capsule strips easily. Beneath the capsule are a number of hemorrhages. Organ is pink in color. Cuts fairly easily; cut surface is light yellow in color, and the contrast between the cortex and pyramids is fairly well retained, the appearance being that of boiled flesh. The right kidney presents about the same general appearance as the left, both as to external surface and cut section. The liver is examined in situ. Its surface is light red in color. There are one or two small hemorrhages beneath the capsule. The cut surface of the liver is not very rich in blood, and presents the appearance of cloudy swelling. The pelvic organs are examined in situ and nothing abnormal is found.

ANATOMICAL CONDITIONS NOTED.—Cloudy swelling of the heart muscle, liver, and kidneys (in the kidneys amounting practically to parenchymatous degeneration); acute oedema and congestion of the lungs; acute pulpitis of the spleen. There are hemorrhages beneath the pleura and beneath the pericardium and the fibrous capsule of the kidney. There is a polyadenitis of very insignificant type. Septicæmia due to the presence of an organism morphologically identical with *B. pestis*.

CAUSE OF DEATH.—Bubonic plague (provisional diagnosis).

X.

C. L.; age, 54; male; died 32 Fish alley; death occurred 4.30 p. m., October 22; necropsy October 23, by Asst. Surg. Donald H. Currie. Present: Passed Asst. Surgs. Rupert Blue, W. G. Stimson, and Hugh S. Cumming; Asst. Surgs. B. J. Lloyd, C. E. D. Lord, and W. M. Wightman; Surg. W. F. Arnold, U. S. Navy; Dr. S. J. Call, of the Revenue-Cutter Service; Doctor McDonald, bacteriologist to the board of health at Honolulu; Drs. Howard Morrow, William C. Hopper, W. M. Dickie, Carleton Mathewson, Arthur A. O'Neill, and Bellinger, of Omaha.

NECROPSY.—Body that of a fairly well nourished, moderately well-developed Chinese male about 50 years of age. Sclerae very slightly injected, showing no hemorrhages; pupils contracted moderately. Post-mortem lividity moderate over dependent parts, especially about the shoulders and neck. Two hemorrhages due to Chinese counter irritation just above the inner end of either clavicle. A Chinese ointment on the skin over the lower portion of the sternum. Rigor mortis almost absent. Muscles of calves of legs contracted. Fingers flexed only moderately on palms of hands; thumbs not flexed. A swelling in the left inguino-femoral region is noted; is covered with some Chinese medicine. This swelling extends from about the level of Poupart's ligament to the beginning of the middle third of the thigh, anterior aspect. There is oedema in this region and examination by palpation shows that apparently the enlargement is due to a mass of glands which are matted together by surrounding oedema. Incision is carried through this area. Tissues are found to be injected and oedematous, and about one-half inch beneath the surface of the skin a large mass of very hemorrhagic glands is found. The surrounding tissue appears very moist, the oedema is not sufficient to cause a flow of serum from the dependent portion of the incision. Smear made from this mass of inflamed glands. This infiltration is found extending over the subcutaneous and periglandular tissue down to the muscle. The glands incised through and show hemorrhage and intense injection, there being little or no necrosis. After this mass has been excised the space left by its removal fills up with a sero-hemorrhagic fluid, but less than is usually the case in plague. Incision carried over the right inguino-femoral region. From under the foreskin of the penis is noticed a discharge of a purulent fluid. It is found to be in a state of balanitis. Smear made from this fluid shows that an organism in every respect identical with *B. pestis* is present in large numbers. There are also other organisms present, but the latter are greatly in the minority. From this we are led to infer (if this organism prove to be pest) that we have here, among other things, a plague balanitis. Smears from the gland show a pest-like organism in almost pure culture, the exception being a few diplococci. The smears from

the spleen show only saprophytic rods. Incision is made in the right axillary region, but neither edema nor glandular enlargement is found. Incision is made in the left axillary region, but nothing is noted. Long median incision made. Subcutaneous fat well preserved and rather moist. Muscles about normal in color, moist and fairly well developed. The intestines do not bulge through the abdominal opening and are only partially covered by omentum. Omentum rich in fat; intestinal coats moist, smooth, and glistening. The abdominal cavity contains no free fluid, although there is an excess of moisture on the intestinal coats. The appendix is rather larger in circumference than is usually the case; it points toward the umbilicus, upward and slightly backward. It is filled with fluid feces, and is normal in appearance. The liver is visible for less than two gloved fingers in the median line, not visible at all in the umbilico-mammary line. It is reddish yellow in color, the latter predominating. There are several stains just beneath the capsule, apparently hemorrhagic in character. The spleen is bound by a few soft adhesions to the abdominal wall and the viscera, but is removed without difficulty. Organ about normal in size; its capsule wrinkled; extremely soft in consistency. In that portion which has not undergone post-mortem change it is of a reddish-gray color. The organ shows no subcapsular nodules. It cuts easily; cut surface shows pulp bulging and diffuent. The surface is rather poor in blood. The thorax is opened by removal of sternum, and, with the exception of the cartilage of the first rib, shows no ossification. The right lung collapses completely anteriorly, and extends toward the median line for one finger breadth beyond the cut border of the cartilages. The left lung almost completely collapses anteriorly, and extends for about the same distance toward the median line. The pericardial area is apparently slightly increased in size. The pericardial sac is opened and the heart lifted out. The sac is found to contain probably 25 or 30 c. c. of clear blood-stained serum. The apex of the heart is formed about equally by the right and left ventricles. The superficial vessels are very slightly engorged and tortuous, some of them showing an early sclerotic change in their coats. There are several very small milk spots over the surface of the right ventricle. There are no hemorrhages beneath the pericardium. The left ventricle is opened; contains fluid blood with a few very small post-mortem clots. The right ventricle is opened; contains fluid blood and gas. The left auricle is opened; contains fluid blood and post-mortem clots. The right auricle contains a large ante-mortem clot, also post-mortem clots and fluid blood. The right auriculo-ventricular opening admits six gloved fingers easily. The left auriculo-ventricular opening admits two gloved fingers easily and three with slight stretching. The left lung is removed from its cavity, is found to be adherent over posterior portion of its lower lobe, the adhesions apparently of rather long standing. The lung is removed by excising its bronchial connection and the pleural surface washed. The organ is about normal in size for the individual. The upper lobe has not completely collapsed. The pleural surface of the upper lobe has not lost its luster and glistening. It shows one or two subpleural hemorrhages. Organ pits on pressure, shows rather deficient crepitation, the latter being due to the cedematous fluid. The surface of the lower lobe, except for a few hemorrhages underneath its pleura, appears normal. Pits to a less extent than the upper lobe and crepitates rather deficiently. The incision is carried through both upper and lower lobes. The surface of the upper lobe is of a dark red color, and contains a rather large quantity of serum and blood. Pressure causes a large quantity of blood-stained serum and a moderate quantity of air to exude. A portion of this is excised and thrown into water and found to float fairly high. The surface of the lower lobe is of the same deep reddish color; contains a large per cent of blood, though the upper lobe also contains less air. A piece of the lower lobe is excised, thrown into water, and found to float lower than that of upper lobe. The left lung is removed; it is found to be firmly adherent on its diaphragmatic surface to the lower lobe. In excising the bronchial connections of this lobe it is found that the mediastinal glands show calcareous degeneration, probably the result of degenerated tubercular processes. The organ is apparently somewhat subnormal in size for the individual; collapsed almost completely. Slight pitting over the middle and lower lobes alone is noted. The pleural surface appears normal. The organ is about normal in consistency and resistance; cuts rather easily; its cut surface is of a rather dark-reddish color. Pressure causes some blood, serum, and air to exude. Portion of this lung thrown into water floats. The heart is removed by excising the vessels at its base, washed, and it is found that the mitral valve shows a very slight thickening; aortic valves very slightly about their connection

only; none of these conditions being sufficient to be of any practical importance. There is one hemorrhage under the endocardium. The aortic surface, however, shows numerous depressions and raised plaques; these do not obstruct the coronary openings. The heart muscle is of a brownish-red color, about normal in thickness, and fairly normal in consistency. It is probable that there were no inflammatory or degenerative changes of any importance. The left kidney is removed. The fatty capsule is found to be very well preserved. In removing it the fibrous capsule strips off, exposing a very granular, light-mottled surface, being a mixture of areas of light yellow and purplish blue. The surface also shows prominent stellate veins. Organ is smaller than normal; rather firm in consistency; cuts with considerable resistance; the cut surface shows a much diminished cortical border, with the contrast between the cortex and the pyramids fairly well retained. The surface is very poor in blood. Liver is removed; is found to be subnormal in size, probably a third below the normal. It is of a general yellowish-brown color, with large areas of lighter yellow, small areas of bluish black. The lower border of the organ is thin. It is rather soft in consistency. Cuts with a moderate amount of resistance; its cut surface is rather poor in blood, presenting a general boiled appearance and giving a slight grate when the knife is drawn across its surface. There is considerable staining about the bile ducts. A specimen of the distomum sinense is found in the bile passages. The mesentery is rather rich in fat, but its lymph nodes show no enlargement. So far as external inspection shows there is nothing to indicate any abnormality in the intestines, so they are not opened.

ANATOMICAL DIAGNOSIS.—Acute hemorrhagic adenitis; acute pulpitis of the spleen; chronic interstitial increase of liver plus cloudy fatty degeneration; chronic interstitial increase of kidneys; chronic oedema of the lungs; chronic arteritis of the ascending aorta. The acute conditions are due to infection with a bipolar bacillus having all the appearance morphologically of *B. pestis*, the nature of which is to be determined by bacteriological investigation.

XI.

H. I.; age, 16; male; died 334 Bush street; death occurred 2 a. m., October 24; necropsy same day by Asst. Surg. B. J. Lloyd. Present: Passed Asst. Surg. Rupert Blue, Asst. Surgs. Donald H. Currie, C. E. D. Lord, and W. M. Weightman, Drs. Howard Morrow, William C. Hopper, Carleton Mathewson, W. M. Dickle, and L. S. Schmitt.

NECROPSY.—Body that of a Japanese male about 18 years of age, rather poorly nourished, moderately well developed. Thumbs are flexed on palms and fingers over thumbs. Rigor mortis present and well marked. Pupils are somewhat dilated, scleræ are not injected. There are a few small petechiæ on the forearms, arms, and on the lower part of the abdomen. Post-mortem lividity is fairly well marked. No nodular enlargement can be made out in the axillary regions. In the left inguino-femoral region is a large swelling ovoid in shape. Over this swelling the skin is ecchymotic. An incision reveals a large lymph node, the tissues surrounding it being oedematous and infiltrated with blood, the node itself being markedly hemorrhagic. This node is removed with two or three other smaller ones in the immediate vicinity, and smears made from it stained with carbo-thionin show a very few cocco-bacilli. The tissues upon which this gland was lying are quite oedematous and hemorrhagic. A smaller and deeper node is removed which is necrotic and smears from this show a considerable number of organisms morphologically resembling *B. pestis*. Incision into the right inguino-femoral region also shows enlarged nodes, but the enlargement is not very marked. In the right axillary region we find enlarged nodes which are hemorrhagic. Body is opened by a median incision. Subcutaneous fat is small in quantity. Abdominal muscles are red in color and moist. The peritoneum is somewhat duller than normal; its vessels are quite prominent. The appendix is normal in appearance; points downward and to the right. The spleen is removed; is a little enlarged. The capsule is tense. The surface of the organ is almost pink. The organ is not very firm in consistency. Cuts easily; cut surface dark red in color, fairly rich in blood. Sternum is removed. The lungs almost completely collapse on the removal of the sternum. There are no adhesions on either side of the pleura. The pericardial area is about normal in size. The pericardium is opened, and contains a small quantity of clear, straw-colored fluid, probably a little in excess of the normal in amount. There are no hemorrhages under the pericardium. The apex of the heart is made up almost entirely of the left ventricle which is firmly contracted. The

right ventricle is opened and contains fluid blood. The left ventricle is empty. The left lung is removed; is about normal in size. Pleural surfaces have not lost their glistening. The lung presents a very small quantity of external pigment. The organ crepitates throughout, but crepitation is diminished. Cuts fairly easily; cut surface is bright red in color, not very rich in blood. Pressure causes a small quantity of a thick, viscid, muco-serous fluid to exude mixed with a very little air. A portion of the lung excised, floats. Right lung is removed; presents about the same general appearance as noted in the left. There are two or three small hemorrhages under the pleural surface. The organ cuts with slight resistance; cut surface is dark in color, moderately rich in blood. There is a marked diminution in the amount of air normally contained in the air vesicles, but there is no attempt at consolidation. Left kidney removed. Fatty capsule is not very abundant. Organ is normal in size. Fibrous capsule slightly adherent. The cut surface of the kidney is apple red, almost yellow in color; the cortex is swollen; the contrast between the cortex and pyramids is fairly well retained, the organ being in a condition of cloudy swelling, practically amounting to parenchymatous degeneration. The right kidney is removed; presents about the same external appearance as the left. The vessels in several places under the capsule are somewhat injected, but there are no distinct hemorrhages. The cut surface presents the same general appearance as in left kidney, but is perhaps a better picture of cloudy swelling than the left. The bladder is distended with urine. The liver is about normal in size; is examined in situ. The surface is perhaps a little lighter than normal in color. Cuts fairly easily; fairly rich in blood. The cut surface is slightly mottled in appearance. There is no increase in connective tissue. Organ has the appearance of boiled flesh.

ANATOMICAL CONDITIONS NOTED.—Cloudy swelling of the heart muscle, kidneys, and liver; acute pulpitis of the spleen; polyadenitis; septicæmia due to an organism morphologically indistinguishable from *B. pestis*.

CAUSE OF DEATH.—Bubonic plague (provisional diagnosis).

XII.

L. S.; age, 57; male; died 627 Jackson street; death occurred 12.30 p. m., October 29; necropsy October 30 by Asst. Surg. Donald H. Currie. Present: Passed Asst. Surg. Rupert Blue, Asst. Surgs. B. J. Lloyd and C. E. D. Lord, Doctors Howard Morrow, William C. Hopper, Carleton Mathewson, W. M. Dickie, Chester H. Woolsey, Arthur A. O'Neill, and J. T. McDonald, of Honolulu.

NECROPSY.—Body that of a fairly well-developed, moderately well-nourished Chinese male about 57 years of age. Pupils moderately dilated; scleræ slightly injected, showing no hemorrhages. Post-mortem rigidity and lividity, the latter over the dependent parts, fairly well marked. A swelling in the left inguino-femoral region roughly about 7 inches by 3 inches in size. The lower portion of it is covered by black, tarry Chinese ointment. About 4 inches above the knee, on the inner aspect of the thigh, there is a hemorrhage about half the size of a 10-cent piece, surrounded by a zone of injection. Smear made from this, stained with carbo-thionin, shows typical pest-like organisms. Scattered over the abdomen are numerous petechial hemorrhages, which do not disappear in the least on pressure. No glandular enlargement is noted on palpation in the right inguino-femoral region nor in either axilla. The muscles of the calves are firmly contracted. The arch of the foot is increased and the foot turned inward. The fingers are slightly flexed; thumbs drawn a little toward the median line. Incision made over the swelling in the left inguino-femoral region. Tissues in this region found to be extremely hemorrhagic. There is a moderate amount of moisture, but less œdema than is usually seen in cases of this type. This mass of hemorrhagic, infiltrated tissue, amounting to probably 2 or 3 ounces or more, is dissected out en masse and incised through. It is found to be composed chiefly of glandular tissue, the cut surface of which shows numerous hemorrhages of a dark reddish, mottled color; is moderately moist, but shows no necrosis or tendency to break down. Incision is made in the right inguino-femoral region. One small gland found, showing distinct cortical injection. Incision made in the right axilla. One gland is found very slightly enlarged, showing cortical injection. Incision is made in the left axillary region. Neither œdema nor glandular enlargement is found. Long median incision made. Subcutaneous fat is very well preserved, remarkably well for an individual of this build and external appearance. Muscles rather dry and

of a deep reddish color. Peritoneal cavity opened. Intestines do not bulge through the incision; are only partially covered by omentum, which is very rich in fat. Intestines collapse; their coats of normal appearance, not injected, rather moist, but no free fluid in the peritoneal cavity. The appendix is rather long, is normal in appearance, points toward the true pelvis. The liver is not visible below the costal border in either median or umbilico-mammary line. The stomach is in about normal position. The spleen is removed without difficulty; is very slightly enlarged as compared with what would be expected in an individual of this size; its capsule is quite tense; organ of a bluish-illac color, showing numerous small hemorrhages under its capsule. The organ is rather firm in consistency; cuts very easily; its cut surface is only moderately rich in blood; shows a very slight bulging of the pulp; no connective tissue increase. Thorax opened by removal of sternum. The muscles over the anterior portion of the thorax found to be about as those described in opening the abdomen, except possibly they are a little lighter in color. They are unusually dry for an individual dead of an acute disease. The costal cartilages are somewhat ossified, especially on the right side. The lungs are found to almost meet in the median line, lacking about one finger breadth. They do not completely collapse anteriorly. When the lungs are laid back the pericardial area is found to be probably slightly increased, but such increase is apparently due to increase in the size of the heart muscle. The right lung is lifted out of its cavity and found to be nonadherent. The right pleural cavity is found to contain probably half a pint of blood and serum. The left lung is lifted out of its cavity and the same hydrothorax is found to exist. The pericardial sac is opened and the heart lifted out. It is found to contain very little fluid, but what there is is decidedly blood tinged. The apex of the heart is formed about equally by the right and left ventricles. The superficial arteries show thickening of their coats. There are several small milk spots over the surface of the heart. The veins are very slightly, if at all, tortuous and somewhat engorged. The organ is very soft in consistency. The terminal veins along the main trunks are found to be very much dilated and there is a diffuse redness extending into the surrounding tissue, but aside from this there is no evidence of any tendency to hemorrhage into the pericardial surface. The left ventricle is opened; is found to contain a small amount of gas, semifluid blood, and post-mortem clots. The right ventricle is opened and the same contents in the same proportions are found. The left auricle is opened; the same contents found. The left auriculo-ventricular opening is found to admit three gloved fingers with slight difficulty. The right auricle is opened; found to contain large quantities of fluid blood and post-mortem clots. The right auriculo-ventricular opening admits five gloved fingers easily. The heart is removed by severing the vessels at its base. It is found that this muscle is so soft that the stretching necessary to make the incision causes tearing of its substance. The heart is washed and the organ laid open. It is found that the aortic valves, the surface of the ascending aorta, and the mitral valve are in a state of acute arteritis and endocarditis. There is one rather large hemorrhage, half the diameter of a 10-cent piece, at the base of one of the aortic valves. The left ventricle muscle itself is very thin, of a grayish, reddish color, the latter color predominating; very soft in consistency, friable. The whole endocardium shows the same injection described. The right heart shows the same diffuse inflammation of the endocardium. The left lung is removed from its cavity. It is found to be about normal in size, pits very slightly on pressure; its pleural surface has not lost its smooth, glistening appearance, showing that the exudation found within the pleural cavity was not inflammatory. There are no hemorrhages noted under the pleura. The organ crepitates fairly well throughout; is about normal in consistency; cuts easily; its cut surface is rather dark in color, pressure causing a large quantity of blood and a rather deficient amount of air to exude. This is probably only due to congestion. A portion of the lung excised is thrown into water; found to float fairly high. This is for the lower lobe. The cut surface of the upper lobe is of a fairly normal appearance, considering the length of time since death. The right lung is removed. It is found to be about normal in size, possibly slightly enlarged; pits on pressure rather more than its fellow of the opposite side; crepitates well throughout, though a considerable amount of fluid can be felt within. The organ is about normal in consistency; cuts easily; its cut surface is of a moderately dark reddish color. Pressure causes about the same amount of blood, more air, and serum to exude than its fellow of the opposite side. Left kidney removed. Its fatty capsule is found to be fairly well preserved; strips off rather easily and without tearing off the fibrous cap-

sule with it. The fibrous capsule strips off rather readily, exposing a smooth, yellowish-red surface, in which the stellate veins show up prominently. The organ is about normal in size and consistency; cuts with about the normal resistance; its cut surface is rather rich in blood. The contrast between the cortex and the pyramids is fairly well retained. The cortical border is very slightly diminished in breadth apparently in places. The vessels show considerable injection and the color of the organ is rather more of a lightish yellow (as seen through the pink) than normal. The liver is probably subnormal in size. Its lower border is about normal in shape. The organ is of a light lemon-yellow, mixed with a chocolate-brown color, interspaced with areas showing venous engorgement in the terminal vessels. The organ is rather soft in consistency; pits on pressure; cuts easily; its cut surface is about the same color as seen through the capsule and possibly even more yellowish in appearance. The whole structure of the organ has a boiled appearance and represents the late stage of cloudy swelling going into fatty degeneration. The organ is rather poor in blood. Two specimens of *Distomum Sinense* are found in one of the bile ducts when the organ is squeezed. The intestines, partially described before, are normal in appearance externally. The mesenteric glands are not enlarged; the intestines are not opened.

ANATOMICAL DIAGNOSIS.—Acute endocarditis; acute fatty change of myocardium; moderate pulmonary emphysema; acute renal congestion; cloudy swelling, going on to fatty change of liver; moderate acute pulpitis of spleen; acute hemorrhagic adenitis, especially in the right inguino-femoral region. The acute processes mentioned appear to be due to infection with a pest-like bacillus, the exact nature of which is to be determined by bacteriological examination. Smears from the glands and the hemorrhage mentioned on the inner aspect of the thigh, from the spleen, from the lung, show a bipolar cocco-bacillus, occurring sometimes with doughnut forms, indistinguishable from *B. pestis*.

XIII.

S. C.; age, 7; female; died 742 Washington street; death occurred 4 a. m., November 4; necropsy same day by Asst. Surg. Donald H. Currie. Present: Passed Asst. Surg. Rupert Blue, Asst. Surgs. B. J. Lloyd and H. A. Stansfield, Drs. Arthur A. O'Neill, Chester H. Woolsey, Carleton Mathewson, W. M. Dickie, Howard Morrow, and William C. Hopper. Body that of a Chinese female about 7 years of age.

NECROPSY.—Body well nourished, fairly well developed for a child of this age. Post-mortem lividity moderate over dependent parts. Post-mortem rigidity almost absent. Scleræ very slightly injected; pupils moderately dilated. Hemorrhage over right eyebrow, possibly due to contusion. Similar hemorrhagic conditions between the inner portion of the orbit and the nose on either side. Some glandular enlargement palpable at the angle of the jaw, left side, and there is prominence in this region. There is a swelling extending from the left clavicle down to the ninth or tenth rib and its anterior aspect bounded by a line running from the inner aspect of the left clavicle. It extends downward and backward to the posterior axillary line to the shoulder joint, extending up to the axilla, in the axilla considerable glandular enlargement can be noted. No glandular enlargement palpable in either of the inguino-femoral regions. A subcutaneous hemorrhage or area of discoloration in the inner aspect of the left femoral region. The muscles of the calves are somewhat contracted. The arch of the foot is high, the toes turned inward. The thumbs are flexed in toward the median line of the palms and the fingers are flexed over them. Incision made over the swelling in the angle of the left side of the jaw and very much enlarged, hemorrhagic glands found in this region. This gland is dissected out and incised through. Cut surface is found to be very much injected and its cut surface moist. Incision is made in the inner aspect of the clavicle over the swelling noted in this region. The muscles are found to be swollen, oedematous, of a light brownish-red color, the subcutaneous tissue showing the gelatinous oedema. Incision is carried upward into the axilla and serum flows freely from this region. The tissue in the axillary region is removed en masse; is found to be very deeply injected. Glands show considerable enlargement, four or five times their normal size or more. Incision made in the right axillary region and a few very slightly enlarged and deeply injected glands are found. One of these is cut open and a hemorrhage found, plus the deep

Injection. Incision made in the right inguino-femoral region and a gland similar to that in the right axilla found. Incision made over the left inguino-femoral region; same condition. Long median incision made. Subcutaneous fat fairly well preserved. Muscles of a dark reddish color, moderately dry. Smears from the glands at the angle of the jaw, stained with carbo-thiouin, shows a pest-like bacillus apparently in pure culture. Abdomen opened. Intestines bulge slightly through the opening. The omentum is rather poor in fat, only partially (about two-thirds) covering the anterior aspect of the intestines. Intestinal coats are very moist, glistening; vessels not injected, but show numerous hemorrhages under the peritoneum. Most of these hemorrhages are bright red in color and recent. There are several of a bluish-black color. The whole peritoneal cavity is very moist and there is about 30 c. c. of fluid. The appendix is normal in appearance, quite long, recurved upon itself, pointing upward and forward. The liver is barely visible below the costal border in the umbilico-mammary line and not visible at all in the median line. The stomach is in about normal position. Stand of the diaphragm, left, fourth interspace; right, fifth interspace. Spleen is removed without difficulty, being nowhere adherent, except at the upper portion where the adhesion is very fresh, soft, and easily broken. The organ is enlarged to possibly one-third above the normal size; it is tense, its capsule not wrinkled. Capsule covered with lymph deposit, which has undergone very little organization. Under the capsule there are numerous hemorrhages varying from almost microscopical. The organ is firm in consistency, but easily pliable to pressure exerted through its capsule. It cuts very easily; its cut surface is not very rich in blood, shows a very slight bulging of the pulp, no connective tissue increase. It has a mottled appearance, being made up of very small areas of red and light pinkish yellow. Thorax opened by removal of sternum. The muscles over the thorax present the same rather dry, deep reddish appearance as those noted in opening the abdomen. Costal cartilages show no ossification. The lungs almost meet in the median line, lacking only about half a finger breadth. They do not collapse completely anteriorly. They are not adherent anteriorly. When laid back the pericardial area is exposed. It is found that the pericardial area is about normal in size, possibly very slightly increased. There is one hemorrhage on the mediastinum just overlying the pericardium. The pericardium sac is opened and the heart lifted out. The sac is found to contain probably 25 or 30 c. c. of a clear, straw-colored serum. The apex of the heart is formed almost equally by right and left ventricles. The left plays a slightly greater part than the right. There are numerous hemorrhages scattered over the pericardial surface. The vessels are engorged, and along the terminal vessels is seen the redness mentioned in the two preceding pest necropsies, gradually fading into the normal tissue. Right ventricle opened; found to contain fluid blood only. The left ventricle opened; almost empty, the exception being a few drops of clear fluid. The left auricle is opened; contains fluid blood, some gas, and a few post-mortem clots. Right auricle opened; contains fluid blood and post-mortem clots. Left auriculo-ventricular opening admits one gloved finger easily. Right auriculo-ventricular opening admits two gloved fingers with slight stretching. Left lung lifted out of its cavity. The left pleural cavity is found to be dry. The organ is removed by excising the bronchial connections. It is possibly slightly increased in size; does not completely collapse; pits on pressure. Pleural surface, after the organ has been washed, is normal in appearance. Aside from the fact that there are numerous small gas bubbles between the pleura and the lung, possibly due to post-mortem change, possibly to the rupture of an air vesicle, the pleura appears normal. The organ is rather firm in consistency; crepitates throughout; cuts easily; its cut surface is rather deeply injected, rather rich in blood; pressure causes blood, air, and serum in about the usual proportions to exude. When the blood is removed from the cut surface of the organ there is noticed in several places a slight mottling, but apparently it is not pneumonic. However, a portion of it is excised and thrown into water; is found to float. From the middle of one of these lighter areas a very small piece of lung about the size of an ordinary pin head is thrown into the water; it is found to sink. Several others are tried in the same way, but they all float. If any pneumonic areas exist, they are extremely small and few. The right lung is removed from its cavity and the bronchial connections severed. The organ is found not to collapse; to be larger than normal in size; its pleura to be normal in appearance, of bluish-red color. The organ pits slightly on pressure. The consistency is possibly slightly increased. The organ cuts easily; its cut surface is moderately rich in blood. Pressure causes blood, air, and

serum to exude, the air being in slightly deficient amount. The heart is removed; the organ washed and laid open. The endocardium shows as the most prominent thing numerous hemorrhages under the endocardium varying in size from a pin point to as large as a dime. The endocardium itself is transparent. The aortic valves are perfectly soft and pliable. The surface of the aorta is smooth, normal in color and appearance. The heart muscle is of a fairly normal color, probably a little more mixture of brown than is usual; normal in thickness and consistency. The left kidney is removed. The fatty capsule is only fairly well retained. The organ is about normal in size and consistency. Its fibrous capsule strips off readily, exposing a smooth, mottled, yellowish-red surface, in which the stellate veins are fairly prominent. The organ cuts easily, with a rather soapy, greasy feel. Its cut surface is very moist, but only moderately rich in blood. The contrast between cortex and pyramids is all but completely lost. Cortical border is about normal in breadth. The organ has a holed, light yellowish appearance, and shows injection of its blood vessels. Liver removed without difficulty. The liver is adherent to the diaphragm for a quite considerable area, the adhesions being soft and fresh in character. The organ is about normal in size and color, although its lower border is slightly rounded. Its surface shows numerous areas of lymph deposit, some of which have already been mentioned as binding it to the diaphragm. Moderate, recent perihepatitis. The organ cuts with considerable resistance; its cut surface is moist, but rather poor in blood. Its structure is fairly well retained. The color is made up of islands of normal, or possibly more yellow than normal, liver tissue and areas of venous congestion. It is possible that there is some acute change in the organ, but very little. The intestines, as before mentioned, show hemorrhages into the peritoneal coats. The mesenteric glands are enlarged and the mesenteric vessels engorged. The intestines are not opened. From the fact that a diplococcus is mixed with the pest-like rod in the smears and that one of the buboes is found at the angle of the jaw, the possibility of there being a throat infection is to be investigated. The child's head is put on a block and incision made of the jaw under the symphysis, so as to join the long median incision before described. Trachea removed. Hemorrhage found in the tissue around the epiglottis, together with hypertrophy of the papilla in this region. The tonsil is enlarged on the left side. This is excised; it is found to be very deeply congested; is incised, very soft in consistency, showing a deep, almost hemorrhagic condition throughout the substance, and a smear from it shows large number of pest-like rods and diplococci. Inspection of the external genitalia shows nothing abnormal.

ANATOMICAL DIAGNOSIS.—Acute tonsillitis; acute polyadenitis, especially of the left axillary and left cervical glands; acute moderate pulpitis of spleen; acute nephritis; acute congestion of lungs; hemorrhages into the various serous surfaces. All the conditions noted are probably due to infection with a bipolar, pest-like bacillus, which is to be carried through the usual bacteriological tests to determine its nature.

XIV.

J. S.; age, 7; female; died 844 Washington street; death occurred 5 a. m. November 7; necropsy same day by Asst. Surg. B. J. Lloyd.

NECROPSY.—Body that of a Chinese female child aged 7 years; fairly well developed, fairly well nourished. A partial necropsy revealed the following anatomical lesions: Acute parenchymatous degeneration of the kidneys; polyadenitis; hemorrhagic diathesis; acute pulpitis of the spleen; septicæmia due to the presence in the glands and spleen of a bacillus morphologically indistinguishable from *B. pestis*.

XV.

C. M. T. S.; age, 54; female; died 1016 Stockton street; death occurred 11 p. m. November 11; necropsy November 13 by Asst. Surg. B. J. Lloyd. Present: Asst. Surg. C. E. D. Lord, Doctors Howard Morrow, William C. Hopper, Chester H. Woolsey, Arthur A. O'Neill, W. M. Dickie, and Carleton Mathewson.

NECROPSY.—Body that of a Chinese female about 54 years of age, fairly well developed, well nourished. Post-mortem rigidity is almost absent. There is lividity over the dependent parts, and to a moderate extent generally. A few small petechial spots are noted over the limbs. A preliminary incision over a moderately enlarged node in the left inguino-femoral region was made yesterday when the body was brought to the morgue, and smears from an enlarged lymph

node showed a number of organisms which were morphologically indistinguishable from *B. pestis*. Pupils are midway between dilatation and contraction; the sclerae are slightly injected. There is slight nodular enlargement in the axillary and both femoral regions. Body is opened by a median incision. The subcutaneous fat is very unusual in amount for one of this race. The abdominal muscles are red in color and moist. The omentum almost completely covers the intestines and is very rich in fat. The intestines do not bulge through the incision, and the stomach is slightly distended with gas. The liver is barely visible below the costal margins. Intestines are normal in appearance. In the psoas muscle on the right side are numerous hemorrhages. The appendix is normal in appearance and points downward and to the right. The spleen is removed; is about normal in size, perhaps a little enlarged; the surface is light red, almost pink in color. The consistency is quite soft. The capsule is tense and smooth. Organ cuts easily; cut surface is very rich in blood. There is marked bulging of the pulp. Smears made from the cut surface of the spleen show coco bacilli resembling *B. pestis*. Sternum is removed. The lungs do not collapse on removal of the sternum. The right lung is visible for about one finger breadth beyond the cut border of the cartilages; the left is flush with this border. The pericardial area is slightly increased in size. There are numerous adhesions of the pleura anteriorly on the left side, which are fairly easily broken up. Similar adhesions are noticed on the right side to a less marked extent. Pericardium is opened, and contains about 20 c. c. of blood-stained serum. Upon the posterior surface of the heart are seen a number of rather diffuse subpericardial hemorrhages. The left lung is removed. The pleura is thickened; the organ crepitates throughout. Cuts fairly easily; cut surface is dark in color, moderately rich in blood. Smears show a few coco bacilli with some diplococci. In the upper lobe is a small area which is apparently the seat of calcareous change. Pressure causes serum, a large amount of blood, and a diminished quantity of air to exude. Necropsy discontinued on account of an accident.

ANATOMICAL CONDITIONS (additional note).—Congestion of lungs, pleuritis, acute pulpitis of spleen, acute parenchymatous degeneration of kidneys, septicaemia. Cause of death to be determined by bacteriological investigation.

XVI.

H. M. C. S.; age, 26; female; died 628 Jackson street; death occurred 6 a. m., January 10; necropsy same day by Asst. Surg. B. J. Lloyd. Present, Drs. Chester H. Woolsey and William C. Hopper.

NECROPSY.—Body that of a Chinese female about 32 years of age; fairly well nourished, rather poorly developed. There is a nodular enlargement in the right inguinal region extending above Poupart's ligament, also in the left axillary region. There are several small points of counter irritation on various parts of the body. Post-mortem lividity and rigor mortis fairly well marked. The sclerae are not injected. An incision is made into the left axilla and a quantity of fat with an enlarged lymph node about the size of an almond is removed. The cortex of this node shows some injection and there is one area about the size of a split pea which is apparently beginning to be necrotic. Incision is made into the right inguinal region and two or three small lymph nodes are removed. An incision into these nodes shows nothing beyond injection. Body is opened by a median incision. Subcutaneous fat is fairly well preserved. The abdominal cavity is opened. There is some dilatation of the vessels of the peritoneum. The omentum almost entirely covers the intestines, and is adherent to the upper border of the uterus and to a less extent to the fallopian tubes. The ovary on the left side is enlarged. The stomach extends for a hand's breadth below the xiphoid cartilage; liver for about two finger breadths in the median line. Spleen is removed; is enlarged. The surface is of a reddish, more nearly pinkish color. Capsule is tense. The organ is not very firm in consistency; cuts easily; the cut surface is light red in color, not very rich in blood, but quite moist. There is bulging of the pulp. There are numerous pin-point, whitish areas uniformly distributed over the cut surface. Pericardium is opened. The heart contains a considerable quantity of blood and is somewhat flabby. The left lung is lifted out of its cavity; is about normal in size; crepitates throughout. The pleural surfaces are fairly normal in appearance. Organ cuts fairly easily; the cut surface is red in color, in some places dark, in some places bright red; fairly rich in blood and quite moist. Pressure causes serum tinged with blood, with a diminished quantity of air, to exude.

The right lung is removed: presents about the same general appearances as the left. Crepitation is somewhat diminished, but is general throughout. Organ cuts fairly easily; the cut surface is not very rich in blood, but quite moist, dark red in color. Pressure causes a large quantity of serum mixed with air to exude. Heart is removed. The right ventricle is opened; contains fluid blood, with a few small clots. Left ventricle is opened; contains a very small quantity of clotted blood. The surface of the aorta and the endocardium are normal in appearance. The heart muscle is paler than normal. The left kidney is removed. Organ is slightly enlarged. Fibrous capsule strips off very easily, leaving a surface which is light red in color. The contrast between the cortex and the pyramids is well retained. Cortical portion is swollen and the surface of the kidney is very moist. The left kidney is removed. There is a small hemorrhage under the capsule. Organ presents the same external appearance as that of the left. Capsule strips off readily. The organ cuts fairly easily. The contrast between the cortex and the pyramids is very well retained; the cortex is swollen and œdematous, resembling boiled flesh in appearance. The liver is examined in situ; cuts easily, is rather poor in blood, but moist, fairly normal in appearance. Appendix is normal. The adhesions mentioned between the pelvic organs and the omentum present the appearance of rather long standing. The tubes are thickened. The tube on the left side is removed and opened; is found to contain a small quantity of pus. The ovary is sclerotic in appearance. The right ovary is cystic (the cysts are not very large) and is also sclerotic.

ANATOMICAL CONDITIONS NOTED.—Acute congestion of the lungs, with slight œdema; acute pulpitis of the spleen; polyadenitis (slight), involving the lymph nodes of the axillary and inguinal regions; acute cloudy swelling of the kidneys; double oophoritis; pyosalpinx. There is present in the glands removed, in the spleen and in the lungs, an organism which is morphologically indistinguishable from *B. pestis*.

XVII.

L. W. W.; age, 62; male; died 624½ Jackson street; death occurred 9 p. m., January 11; necropsy January 12 by Asst. Surg. Donald H. Currie. Present: Passed Asst. Surg. Rupert Blue, Asst. Surg. B. J. Lloyd, Doctors F. G. Canney, Arthur A. O'Neill, Chester H. Woolsey, and Carleton Mathewson.

Necropsy.—Body that of a poorly nourished, poorly developed Chinese male, about 65 years of age. Sclerae very much injected; pupils contracted. Body still slightly warm. Rigor mortis present; post-mortem lividity all but absent, although there is a general darkish appearance of the body from the waist line up as compared with the lower extremities. There are a few possibly slightly enlarged lymph nodes in both inguino-femoral regions, and some distinctly enlarged ones in either axilla; they are, however, firm and movable. Incision made in the right inguino-femoral region and the lymph nodes mentioned found to show cortical injection, to be slightly larger than the usual normal. One of them is removed, incised, and a smear made from it. Incision made in the left inguino-femoral region, and a lymph node fully twice its probable normal size is found; shows considerable injection; is incised through; its cortex is found to be deeply injected and a smear taken from it. In this latter region, while there is not enough œdema to flow from the knife point, the tissues are decidedly moist and œdematous. Incision made in the right axillary region. The same condition of the lymph nodes noted in the left inguino-femoral is found here. The larger of these is removed. It is found to show injection; incised through and its cut surface is found to show considerable injection. The left axillary region is next incised into and the same condition of the lymph nodes noted. One of these incised through presents the same appearance to a less degree, its cut surface found to be quite moist as well as injected. Long median incision made. The subcutaneous fat is all but absent. Subcutaneous vessels show marked injection. (Smears made from the right inguino-femoral gland, stained with carbo-thionin, show a few coccobacilli taking the bipolar stain, closely resembling *B. pestis* in morphology.) The muscles found to be of a dark-red color, rather dry. Peritoneal cavity is opened. The omentum found to all but completely cover the intestines. Gland removed from the left inguino-femoral region, stained with carbo-thionin, shows, as far as morphology goes, typical pest-like bacilli in large numbers. One process of the omentum is pushed downward and to the right, and is adherent to a swollen appendix. The vessels in this region show considerable

injection. The adhesions are quite firm in character and completely surround and encapsulate the organ. The appendix is removed and is found to contain a semifluid mass of feces. The appendix, which is quite short, is opened. The surface of the mucosa is found to be somewhat injected, and shows several slight erosions, but is otherwise fairly normal. Its walls are thickened and infiltrated, but there is no evidence anywhere of perforation or anything approaching it. There is nothing except the slight injection of the vessels resembling, in any way, beginning peritonitis. The spleen is removed without difficulty. The organ is found to be slightly enlarged, possibly one-fourth above its normal size. The enlargement is chiefly in length and thickness. The capsule is not thickened except for the fresh lymph deposits between some of the lobes, the organ being quite lobulated. Under the capsule are distinctly seen numerous hemorrhages, and in the center of some of these hemorrhages is noted the small white subcapsular nodules. The organ is quite soft in consistency; its capsule is fairly tense; it cuts with very slight resistance; its cut surface is moderately rich in blood, showing a very slight bulging of the pulp. Stand of the diaphragm on the right side fifth interspace; on the left side, sixth rib. The liver extends for about four finger breadths below the costal border in the median line, and two and a fraction in the umbilicoc-mammmary line. The peritoneal cavity contains no free fluid. The peritoneal coat of the intestines shows slight general injection, especially in the pelvic region, but there is nowhere a loss of luster. The mesenteric glands show a slight, moderate, general enlargement. The thorax is opened by removal of the sternum. The costal cartilages show practically no ossification, which is rather remarkable for a man of this age. Lungs overlap in the median line, the upper half and within a finger breadth of the lower half; they are laid back. Pericardium brought into view. The external vessels of the pericardial sac show some slight engorgement; the sac is about normal in size. Neither lung collapses completely anteriorly. The left one is lifted out of its cavity; found to be nowhere adherent. Organ removed by incising through the bronchi. (Smears from the spleen, stained with carbo-thionin, show organisms of the same appearance as noted in the glands, also a coarser rod.) The left lung found to be considerably enlarged; its pleura has not lost its luster, is of a pinkish gray color, interspaced with areas of bluish black pigmentation; it pits very much on pressure; shows hypercrepitation throughout; cuts easily; cut surface rather poor in blood. Pressure causes some blood, a large amount of air, and a moderate quantity of serum to exude, the condition approaching emphysema with terminal oedema. The right lung found to be bound anteriorly; has some rather soft adhesions, also a small area at the diaphragm of the same kind; organ removed. The condition of the organ is found to be the same as its fellow of the opposite side, only with more oedema. The pericardial sac is next opened, and is found to contain a considerable quantity of clear serum. The heart is lifted out; its apex is found to be formed by the right and left ventricles, possibly the left playing somewhat the larger part. There is one milk spot over the right ventricle and some small opacities scattered over the left. The superficial vessels show some thickening of their coats; they are slightly tortuous and very slightly engorged. The right ventricle is opened; found to contain post-mortem clots and fluid blood. The left ventricle is opened; is found to contain fluid blood and a few post-mortem clots. Right auricle opened; found to be filled to its full capacity with post-mortem clots and some fluid blood. The left auricle opened; found to contain some fluid blood. The heart removed and organ washed and cavities laid open. The mitral valve itself shows a very slight thickening at its base. The aortic valves are perfectly normal. The coronary openings are patulous. There is a plaque about the size of the distal phalanx of the middle finger just above the middle aortic valve. The aorta has a general creamy, ivory-white color; shows a slight general dilatation, but not sufficient to be of any importance during life. Left kidney removed; fatty capsule poorly preserved; when stripped off it is found that the organ is decidedly smaller than normal, even when the age and size of the individual are taken into account. There are numerous small cysts visible through the capsule. The organ is quite firm in consistency. The fibrous capsule, outer layer, also strips off fairly readily, but the inner layer is adherent, being impossible to remove without tearing the organ. The organ cuts with quite moderate increase in resistance; cut surface moderately rich in blood. Decided diminution in the breadth of the cortex, probably reduced to three-fifths its normal size. Contrast between cortex and pyramids perfectly retained. Cortex is of a pale yellowish-red color. Pyramids about normal in

color. Liver examined *in situ*. The organ is found to be somewhat smaller than normal; its lower border is thin and sharp; its capsule is transparent; organ is of a general, brownish, yellowish-red color; rather firm in consistency; cuts easily; cut surface exceedingly rich in blood, which is mixed with a large quantity of bile, possibly due to the occlusion of a duct by *Distomum sinense*. A search is made for this parasite, but none are found. The gall bladder is opened; filled with a rather clear, thin, yellowish bile. The intestines are not opened.

ANATOMICAL DIAGNOSIS.—Pulmonary emphysema; terminal œdema; chronic interstitial nephritis (small red kidney); acute pulpitis of the spleen; acute general adenitis; the latter two conditions probably being due to infection of a bipolar bacillus, the nature of which is to be determined by bacteriological examination; acute catarrhal appendicitis of some duration. Probable cause of death: Septicæmia from the before-mentioned bacillus.

XVIII.

L. N. L.; age, 61; male; died at Oriental Dispensary; death occurred 7 a. m., January 13; necropsy same day by Asst. Surg. B. J. Lloyd. Present: Passed Asst. Surg. Rupert Blue, Asst. Surg. Donald H. Currie, Drs. William C. Hopper, F. G. Canney, Chester H. Woolsey, Carleton Mathewson, and Arthur A. O'Neill.

NECROPSY.—Body that of a Chinese male about 60 years of age; moderately well developed, fairly well nourished. Scleræ slightly injected. Rigor mortis is present, moderately well marked. Post-mortem lividity slight; in dependent parts. In Scarpa's triangle on the left side is a swelling which is easily seen on inspection. The skin over this swelling and in the vicinity as high as Poupart's ligament and extending downward for two or three inches below the swelling is of a mottled purplish color. There is œdema over and surrounding the enlargement. There is a nodular enlargement in both axillary regions. A very small nodular enlargement can also be felt in the right femoral region. An incision is made over the swelling in the left groin. The tissues are œdematous and the vessels are injected; hemorrhages surround the enlarged lymph nodes. A lymph node about as large as a pigeon's egg is removed. An incision into this node shows hemorrhages; the surface is quite moist and in the central part are a number of necrotic foci. An incision into the left inguino-femoral region shows a few very small nodes, the size of a pea. An incision into the right axillary region does not reveal any enlarged nodes. An incision into the left axilla shows a few very slightly enlarged lymph nodes. Body is opened by a median incision. The subcutaneous fat is moderate in amount. The abdominal muscles are red in color and moist. The omentum does not entirely cover the intestines. The intestines do not bulge through the incision, and are normal in appearance. The appendix is normal in appearance; points downward toward the pelvis. Spleen is removed; is very much enlarged. Capsule is tense. There are several flaky deposits of lymph on the surface. The surface presents a light bluish, somewhat pinkish color, broken by a number of decidedly brighter reddish areas. It is soft in consistency; cuts easily; cut surface is moist, fairly rich in blood. There is bulging of the pulp. The color is a medium dark red and is uniform. There is possibly a very slight increase in the connective tissue of the organ. Sternum is removed. Cartilages are very slightly ossified for a man of this age. The lungs do not collapse on removal of the sternum. The right lung presents for three gloved fingers beyond the cut border; the left for almost the same. Pericardial area is slightly increased in size. Pericardium is opened. The cavity contains a small quantity of pale, straw-colored fluid. The heart is lifted out. The surfaces of the pericardium are normal in appearance, except that beneath the visceral layer are a number of small hemorrhages from about the size of a pin head to half as large as a pea. The left lung is lifted out of its cavity. The pleural surfaces are fairly normal in appearance. There are present under the surface of the pleura small collections of air (interstitial emphysema). The left lung is removed. The organ is hypercrepitant, œdematous, pits on pressure; cuts fairly easily; cut surface is dark red in color, is not very rich in blood; pressure causes serum mixed with blood and air to exude. A portion of the lung when placed in water floats high. Right lung presents a slight adhesion at the base; is removed; is œdematous and hypercrepitant; organ cuts fairly easily. Heart is examined *in situ*. The left ventricle contains a small quantity of fluid blood. Right ventricle is opened; is found to contain a considerable quantity of fluid blood with some fairly recent, though possibly ante-mortem,

clots. The left auricle is opened, and is found to be practically empty. The right auricle is opened, and contains a considerable quantity of fluid blood. Heart is removed by severing its vessels. The surface of the aorta, with the aortic valves and the mitral valves, is normal in appearance. The heart muscle is dark red in color. The surface of the endocardium is smooth. Left kidney is removed. Fatty capsule is very abundant. The kidney is perhaps slightly diminished in size, and presents numerous cysts. The capsule does not strip readily. Organ cuts with increased resistance. There is a small calculus, which is easily broken up. The contrast between the cortex and the pyramids is almost entirely lost.

ANATOMICAL CONDITIONS.—Polyadenitis; acute congestion, with œdema and emphysema, of the lungs; acute pulpitis of the spleen; chronic diffuse nephritis; nephrolithiasis; septicæmia probably due to infection by an organism morphologically resembling *B. pestis*.

XIX.

I. R.; age, 18; female; died 6 Verraness street; death occurred February 8; necropsy, same date, by Asst. Surg. Donald H. Currie. Present: Asst. Surg. B. J. Lloyd and Dr. Carleton Mathewson, the undertaker, and the father of the girl.

NECROPSY.—Body brought down late at night. A small incision about one-half an inch in length made in the right inguino-femoral region and a small gland removed. Smears made from it, stained with carbo-thionin, showed three bacilli bearing some resemblance to pest. A small incision was then made in the median line in the epigastric region, an incision just large enough to introduce the hand. A knife introduced through this incision and another incision made through the diaphragm. Through these two incisions the hand and arm are introduced and the base of the lower lobe of the left lung was removed. Showed bronchopneumonia. Smears made from it showed typical pest bacilli.

XX.

G. R.; age, 54; male; died 6 Verraness street; death occurred February 12; necropsy, same day, by Asst. Surg. B. J. Lloyd. Present: Passed Asst. Surg. Rupert Blue, Asst. Surg. Donald H. Currie, Drs. Carleton Mathewson, Chester H. Woolsey, Arthur A. O'Neill, L. D. Baginalupi, Weeks, Snow, Gross, D. F. Ragan, F. G. Canney, Howard Morrow, and W. J. Jackson.

NECROPSY.—Body that of a moderately well developed, fairly well nourished white male about 54 years of age. Post-mortem rigidity is present and quite marked. Post-mortem lividity is fairly well marked, especially in dependent parts. Scleræ are injected. There is slight nodular enlargement in the left inguino-femoral region, to a less extent in the right and also in the left axillary regions. An incision is made into the left inguino-femoral region and a moderately enlarged lymph node is removed. Upon incision, this is found to be slightly hemorrhagic, but is otherwise normal in appearance. Another lymph node removed from this region, which, besides being quite markedly injected, shows a necrotic area in the center. Smears made from these nodes stained with carbo-thionin show organisms morphologically indistinguishable from *B. pestis*. Body is opened by median incision. The intestines are slightly distended with gas, but are otherwise normal in appearance. Spleen is removed; is enlarged; the capsule is unevenly thickened. There are a number of whitish subcapsular nodules, which are probably necrotic areas. Except for these areas and portions where the capsule is decidedly thickened the organ is of a light bluish, somewhat pinkish, color. It is soft in consistency; cuts easily; cut surface is medium dark red in color; not very rich in blood. There is perhaps a slight increase in connective tissue. The pulp is slightly bulging. Smears from the spleen show organisms resembling *B. pestis*. Sternum is removed. The lungs do not collapse on removal of the sternum. The right lung presents for about 3 finger breadth beyond the cut border; the left for about 1½. Beneath the pleura, especially of the right lung, there are extensive areas of small hemorrhages. The pericardial area is slightly increased. Pericardium is opened, and contains perhaps a little in excess of the normal amount of clear serum. The heart is enlarged slightly. There is one small subpericardial hemorrhage on the upper surface of the right ventricle. There is a slight increase in the subpericardial fat. Left ventricle is opened; contains a very small quantity of fluid blood. Left auricle contains post-mortem clots.

Right ventricle contains fluid blood. Right auricle contains a large quantity of post-mortem clot. The left lung is lifted out of its cavity; is nowhere adherent; crepitates throughout; is oedematous; pits on pressure, especially in the upper lobe, where crepitation is diminished. The pleural surfaces are glistening. The organ cuts fairly easily. There is an area near the central portion of this upper left lobe which grossly has the characteristic appearance of bronchopneumonia. A portion of lung tissue removed from this area when placed in water sinks. The lower lobe is congested and contains a smaller quantity of air than normal. The right lung is removed; is markedly oedematous; pits on pressure; is quite boggy. Crepitation is diminished, and in upper lobe is almost entirely absent. Organ cuts with slight resistance. Cut surface is paler than normal, moist, and shows almost complete consolidation, pressure causing a large quantity of serum tinged with blood and practically no air to exude. This involves nearly the whole of the upper lobe on the right side. A portion of the lung excised and placed in water sinks readily. Liver is examined in situ; is cloudy, swollen. The left kidney is removed. The organ is enlarged, perhaps one-fourth or one-third as large again as normal. The fatty capsule is not very conspicuous. The fibrous capsule strips readily, exposing a surface which is paler than normal, but there is injection of some of the *venae stellatae*. Organ cuts fairly easily. The contrast between cortex and pyramids is well retained. The cortex is swollen and the cortical markings are somewhat obscured. The necropsy is discontinued.

ANATOMICAL CONDITIONS NOTED.—A bronchopneumonia involving almost the entire portion of the right upper lobe and a small portion of the left upper lobe; subpleural hemorrhages; cloudy, swelling of the kidneys and liver; acute pulpitis, with slight increase in the connective tissue of the spleen; septicæmia due to an organism which is morphologically indistinguishable from *B. pestis*.

XXI.

F. B.; age, 40; male; died 714½ Jackson street; death occurred February 14; necropsy February 15 by Asst. Surg. Donald H. Currie. Present: Passed Asst. Surg. Rupert Blue, Asst. Surg. B. J. Lloyd, and Drs. Carleton Mathewson, Chester H. Woolsey, and Frederick G. Canney.

NECROPSY.—Body that of a rather poorly developed, fairly well-nourished, Chinese male, about 40 years of age. Rigor mortis and lividity well marked, but the latter confined to the dependent parts. Slight oedema over the lower extremities. Muscles of the calves moderately contracted. Pupils midway between contraction and dilatation. Slight oedema over the malar regions. Long median incision made. Subcutaneous fat is quite well preserved. The muscles of a dark-red color, moderately moist. Peritoneal cavity opened; the omentum almost completely covers the intestines; intestines do not bulge through the opening; the liver is visible for four finger breadths in the median line. The omentum is laid back and exposes the intestines, which are abnormally moist. Their coats are somewhat injected, but smooth and glistening. The appendix is curved twice upon itself, the distal end finally pointing toward pelvis. A very much injected, almost hemorrhagic gland is found in the mesentery about 14 inches above the ileo-caecal valve. This is incised and a smear made from it. Looking through the posterior peritoneal coat, the tissue beneath appears to be injected, so the peritoneum is cut through and examined. Some enlarged glands are found in the center of this injected area. A smear from the first mesenteric gland mentioned, stained with carbo-thionin, shows pest-like organisms. A section of the intestines lying nearest to this mesenteric gland opened and the mucosa examined. The blood vessels are found to show a moderate general injection. Intestinal follicles are a little prominent; this injection increases as you descend; however, there is nothing sufficiently definite to make it even probable that this was the site of inoculation. The spleen is next removed. The organ is enlarged to probably three times its normal size. The capsule is very tense; there are some patches of partially organized lymph on its external surface; there are no white subcapsular nodules noted; the organ is of a uniform purplish, reddish-brown color; quite firm in consistency when light pressure is exerted, but when firm pressure is used it can be felt to break under the capsule. It cuts almost without resistance. Its cut surface is very rich in blood; shows a slight bulging of the pulp. The stand of the diaphragm on the right side is the fourth interspace and on the left side fifth rib. The thorax is opened by removing the sternum. The left lung com-

pletely collapses; is not visible anteriorly. The right lung extends toward the median line beyond the cut border for one and one-half finger breadths. It is bound anteriorly in the lower portion opposite the middle lobe by a small but rather firm adhesion. The lung is laid back. Pericardial area examined; found to be enlarged; the enlargement apparently due to increase in the size of the heart muscle. The adhesion mentioned over the right lung is cut and the organ is found to be further adherent at the apex of the upper lobe. These adhesions are quite firm in character. After being cut and broken, the organ is lifted out of its cavity. The pleura retains its normal luster. About the apex of the upper lobe are nodules the shape of which is visible through the pleura and on palpation these are found to be firm, hard masses about the apex of this lobe. Eight of ten of these circumscribed masses can be palpated. Incision is made through these and they are found to be tubercles which have undergone degenerative—chiefly caseous—changes. The surrounding lung substance in this region is congested, and shows considerable oedema. The lower lobe crepitates throughout; fairly resistant to pressure when the knife cuts. The surface is dark in color; contains a moderate amount of blood. Pressure causes blood, serum, and air to exude in about the usual proportions, probably the blood being a little in excess. The whole organ, however, has rather a leathery resistance when firm pressure is exerted upon it. The left lung is removed. Its pleura is found to be normal in appearance, not even showing subpleural hemorrhages. Organ crepitates fairly well throughout; is rather resistant to knife cut. Its cut surface is lighter than its fellow of the opposite side, being a brown red, which is quite resistant to pressure, and pressure causes blood in excess, some serum, and about the usual amount of air to exude. It has the same elastic, leathery feel that the other one has and which is met with not infrequently in pest independent of any pneumonic condition; when present is usually more marked than in this case, and may possibly be due to involvement of the lymphatics of the lung. A portion of the organ is preserved for section and examination under the microscope. The heart is lifted out of its cavity. Its surface shows several small hemorrhages under the pericardium and one small milk spot. The vessels are not especially engorged except on the posterior side, nor are they tortuous. The apex is formed equally by right and left ventricles. The organ is somewhat enlarged as compared to the fist of the individual. The left ventricle is firm, and apparently hypertrophied; the right ventricle moderately firm. The left ventricle is opened; found to contain both fluid blood and post-mortem clots. The right ventricle is opened; same contents, only more. The left auricle is cut into and found to be almost empty. The left auriculo-ventricular opening admits three gloved fingers easily, four with slight stretching. The right auricle is opened and found to contain a similar quantity of fluid blood and post-mortem clots. The right auriculo-ventricular opening admits four fingers. The heart is removed by excising the vessels at its base. Left heart is next laid open and the organ washed. The aortic surface shows numerous corrugations, the result of chronic endarteritis. The aortic valves are normal. The coronary openings are patulous. The mitral valves are transparent. Probably there is a slight thickening of the endocardium over the columna carnea, but the substance appears normal in color and consistency. The left ventricle wall is a little thickened, but otherwise appears normal. Left kidney is removed. Its fatty capsule is fairly well preserved. Its fibrous capsule removes very easily, except in places where it shows adhesions. The surface is for the most part smooth, but there are patches in which there is a suspicion of granulations, especially along the convex border. The organ is incised through. It cuts with a moderate amount of resistance; its cut surface is rather rich in blood. The contrast between the cortex and the pyramids is poorly retained. The cortical margins are normal in breadth. The whole organ has a very slight yellowish color. Collections of the blood vessels in places can be noted as red points or fine lines. The condition is probably an acute nephritis of several days duration. A section of it is taken for microscopical examination. The liver is next removed. The organ is smaller than normal. Its surface is of a general mottled yellowish pink chiefly, with areas of venous engorgement. Besides this there are numerous black spots scattered over its surface. These, in some cases, show a slight depression of the capsule dipping down into them, but are mostly on the same level with the rest of the organ. These spots vary in size from a pin point to a split pea, and are numerous on the whole surface of the right and left lobes. Some of these are incised into and found to be cystic in character; they contain a small

amount of clear fluid; they are unilocular and are not due to hydatid. The organ is resistant to pressure, cuts with resistance, and its cut surface shows a medium advanced stage of Laennec's cirrhosis. These cysts are in some cases even found in the center of the organ, and while the condition is a rather peculiar one, it is probable that they are due to lymphatic obstruction from the contracted connective tissue. However, section is taken for microscopical examination. An incision is made into the right inguino-femoral region. One small gland found, which, while not specially enlarged, showed a small hemorrhage in the central portion. A smear made from this shows a pest-like bacillus. An incision made in the left inguino-femoral region and nothing found. Incision made in the right axillary region and a bunch of three glands, enlarged to probably twice their normal size, are found. One of the largest of these cut through is found to be deeply congested. An incision made below the angle of the jaw on the right side and a very much injected and enlarged gland is found, typically pest-like in character and probably the primary bubo. The gland is found just internal to the carotid artery. The right tonsil is removed and it is found to be enlarged and congested; is incised through and a smear made from it. Smear made from the gland found in the triangle shows numerous "doughnut" forms, which stain poorly, indicating that it is probably the primary bubo. The tongue is removed. The villi at its posterior portion appear normal, as does the organ throughout except the anterior portion, which has a darkish streak. The larynx and epiglottis are next removed. A large hemorrhage is found on the surface of the epiglottis. The larynx is very much congested and covered with bloody mucus.

ANATOMICAL DIAGNOSIS.—Acute adenitis of the right inguino-femoral, both axillary, retro-peritoneal, anterior cervical, and the glands situated just under the tonsil; acute tonsillitis; acute inflammation of the spleen; acute nephritis. These acute conditions are probably due to the infection with a bipolar pest-like bacillus, the nature of which is to be determined by bacteriological examination. Besides this, there is a hypertrophy, moderate in character, of the left heart, and tubular infiltration of the apex of the upper lobe of the right lung.

XXII.

L. R.; age, 33; female; died City and County Hospital; death occurred February 19; necropsy February 20, by Asst. Surg. Donald H. Currie. Present: Passed Asst. Surg. Rupert Blue, Asst. Surg. B. J. Lloyd, Doctors Chester H. Woolsey, Carleton Mathewson, D. F. Ragan, F. G. Canney, L. D. Baicalupli, Drew, Weeks, Trotter, Clark, and McNutt.

NECROPSY.—Body that of a well-developed, unusually well-nourished white female about 45 years of age. Muscles of calves moderately contracted; arch of foot somewhat raised. Post-mortem rigidity marked in the extremities; absent in the neck. Post-mortem lividity in dependent parts very well marked; slight on the anterior aspect of the body. Scleræ show slight injection but no hemorrhages. The pupils are midway between dilatation and contraction. There is post-mortem lividity over the right cheek and some œdema in this region. No glandular enlargement noted on palpation. Long median incision made. Subcutaneous fat unusually well preserved, being probably 2 inches in thickness on an average. Muscles of abdomen poorly developed, of a light, reddish-brown color. Peritoneal cavity opened. The omentum bulges slightly through the incision; completely covers anterior aspect of the intestines; is very rich in fat. This laid back, the intestinal coats are found to be normal in appearance and moderately moist. The peritoneal cavity contains practically no free fluid. The appendix is a little over an inch long, straight, points toward the true pelvis. Stand of the diaphragm on the right side fourth interspace, left side fifth rib. The liver is visible for about 2 finger breadths in the median line and about the same distance in the umbilico-mammary line. The stomach is in normal position. Spleen is pushed downward and forward; not adherent; removed without difficulty. The organ is enlarged to twice its normal size; the enlargement is chiefly in length but somewhat in thickness. The capsule is wrinkled. Fibrous capsule has been partially torn off in the removal. Capsule is transparent, and through it can be seen an organ of a pinkish blue color. There are none of the white subcapsular nodules sometimes met with in pest, but there are flakes of more or less organized lymph deposits scattered over its surface. Organ is quite soft in consistency; cuts easily; its cut surface shows a decided bulging of the pulp. Surface is not very rich in blood and there is apparently no connective tissue increase. Smear made from this organ, stained with carbo-thionin,

shows an absence of all bacteria. The thorax is next opened by removal of sternum. Costal cartilages show no ossification on the right side; moderate ossification on the left, especially the upper. The lungs do not meet in median line. The right lung extends about half a finger breadth toward the median line beyond the cut border, which is the juncture of the cartilage and rib. The left lung extends toward the median line for 2 finger breadths beyond the costal articulation. The left lung is lifted out of its cavity. The organ is not collapsed, and the lower portion of the upper lobe shows consolidation. The right lung is lifted out of its cavity; found to be free from adhesions, except a slight one at the base, fresh and soft in character. The upper lobe of this organ probably also shows consolidation. The pericardial area is increased in size and its surface covered with fat. Pericardial sac is opened and the heart lifted out. It is found that the sac contains about 50 c. c. of a slightly blood-stained serum. The heart is enlarged to probably one-third above its normal size as compared with the fist of the individual. The apex is formed chiefly by the left ventricle. Its surface shows considerable increase in fat. Its veins are engorged but not tortuous. A close inspection shows that the terminal venules are dilated everywhere (as is frequently seen in cases of pest), and in some of these there are small hemorrhages at the distal ends. The left ventricle is opened; found to contain fluid blood only. The right ventricle opened; found to be practically empty. The left auricle opened; contains fluid blood and one moderate-sized white clot. The left auriculo-ventricular opening admits four fingers with difficulty, three easily. The right auricle opened; almost filled with white clot, some fluid blood. Right auriculo-ventricular opening admits four gloved fingers with slight stretching. The left lung is now removed by severing the bronchus. The organ is enlarged. It hardly collapses at all. The pleura over the lower lobe has not lost its luster; is normal in appearance. The pleura of the upper lobe, lower half, is of a light grayish-red color; has lost its luster completely. The lower lobe crepitates moderately, but the resistance is very much increased, especially in the central portion. The crepitation about the base is fairly normal. In the upper lobe the consolidated area is represented in the lower half of the lung. It is completely consolidated, while the upper half still crepitates. Incision is made through the consolidated portion of the upper lobe and the most resistant portion of the lower lobe. The area of consolidation in the upper lobe is found to be about 3 fingers long by 2 in breadth. It is completely airless. The color, when the blood is removed from the surface, is a general yellowish red, with here and there areas of a darker red hue. The condition met with in the more solid portion of the upper lobe is an increased amount of bloody serum on the surface, which, on being removed, exposes a dark-red surface, all but airless. Pressure in this area causes blood, some serum, and a very little air to exude. Incision is now made through the upper lobe at right angles to the other incision and toward its apex. The same condition to a less extent is met with. Portion of this consolidated area is excised and floats very low, finally sinking, the upper portion of the piece being below the surface of the water. A portion of the more solid area of the lower lobe sinks, condition being bronchopneumonia simulating the pseudo-lobar type. The right lung is removed from its cavity. The middle lobe collapses almost completely. The lower lobe collapses to a less extent, and the upper lobe probably collapses to one-half its normal. The pleura of the lower lobe, except in one area about the size of a 25-cent piece, has still retained its luster and shows nothing abnormal. In the area mentioned, which is of a lightish red color, the pleura has lost its luster. The organ in this region is quite firm and resistant to pressure. Incision carried through it shows the same condition as met in the opposite lung, as far as the naked-eye inspection shows, but from its wedge shape it is probably due to an infarct. The upper lobe, except for this area just described, shows a deficient crepitation throughout, especially marked about its base. Incision is carried through it. It is found to be in the same condition as the upper lobe of the left lung. The consolidation varies in extent in different areas of the lung, but in no portion of this lobe is the organ normal. Incision is carried through the lower lobe. This portion of the organ is found to be congested, although it still contains a considerable quantity of air. A portion is thrown into water and floats fairly high. The left kidney is next removed. Fatty capsule is found to be well preserved. When stripped off, exposes organ about normal in size. Its blood vessels distributed superficially over its capsule show consolidation. The organ is rather soft in consistency. Its fibrous capsule strips off very easily, exposing a moist, light yellowish-red surface in which the stellate veins are very prominent. The surface is perfectly smooth. Incision carried through the

organ. Cut surface found to be quite rich in blood. The contrast between cortex and pyramids is fairly well retained in areas and quite diminished in others. The cortical margin is probably about normal in breadth. The general color of the cortical portion of the organ is a yellowish red, in which red spots show up prominently, representing the congested malpighian bodies. The pyramids are about normal in appearance. The condition is probably an early stage of acute nephritis. The right kidney is next removed. Its attachments are found to be very loose. Its fatty capsule, like its fellow of the opposite side, is unusually well preserved. The organ is about the same size as its fellow. Its fibrous capsule strips off very easily, exposing a very smooth, yellowish-red substance. Organ cuts easily; its cut surface is moderately rich in blood. An incision is made in the right inguino-femoral region to ascertain if there are any enlarged nodes. One slightly enlarged lymph node showing cortical injection is found, and a smear made from it. Another incision is made in the left inguino-femoral region. Incision is made at the angle of the jaw, right side. A very much enlarged, broken-down gland is found, and a smear is made from it. The liver is examined in situ. The organ is somewhat deformed, possibly from pressure of tight clothing. The lower border is very slightly rounded. The organ is probably enlarged. Its surface is smooth. Capsule is not thickened. The color of the organ, as seen through the capsule, is a chocolate brownish red with areas of lightish red and areas of venous dilatation. Organ is very soft in consistency; pits on pressure; cuts easily; its cut surface is moderately rich in blood. Structural appearance is rather lost, showing a slightly "boiled appearance;" it is very soft and friable. There is probably some acute degenerative condition, probably cloudy swelling; is not examined further. The mesentery is gone over and is found to be very rich in fat, but its glands are not visible. The uterus is probably slightly enlarged, firm, in normal position; is not examined further. The bladder is empty and collapsed. The heart is removed by severing the vessels at its base, the organ washed, and its left cavity is laid open. The aorta is almost smooth, showing a few corrugations, which have not interfered with the coronary openings. The aortic valves are slightly blood stained, but are thin and transparent. Mitral valve is normal in appearance. The heart muscle, as seen in the wall of the left ventricle, has a rather brownish, yellowish color, probably due to some acute febrile degeneration. The endocardium generally is smooth and transparent.

ANATOMICAL DIAGNOSIS.—Lobular pneumonia; acute adenitis of right cervical glands; acute pulpitis of spleen; acute nephritis; acute degeneration of liver and heart muscle, the conditions probably being due to infection with an organism which is found in considerable number in the smears from the lungs, the nature of which is to be determined by bacteriological examination.

STATISTICAL TABLES.

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STATISTICAL TABLES.

The following statistical tables are self-explanatory:

TABLE I.—COMPARATIVE TABLE OF NUMBER TREATED—1868 TO 1904.

The following tabular statement will serve to illustrate its growth since the reorganization of the Marine-Hospital Service in 1871:

Operations of the Marine Hospital Service from July 1, 1868, to June 30, 1904.

Fiscal year.	Number of places at which re- lief was furnished.	Number of sick and disabled seamen furnished relief.
Prior to reorganization:		
1868.....	64	11,535
1869.....	64	11,356
1870.....	74	10,560
After reorganization:		
1871.....	72	14,256
1872.....	81	13,156
1873.....	91	13,529
1874.....	91	14,356
1875.....	94	15,009
1876.....	94	16,808
1877.....	100	15,175
1878.....	210	18,223
1879.....	210	20,922
1880.....	210	24,860
1881.....		32,613
1882.....		36,184
1883.....		40,195
1884.....		44,761
1885.....		41,714
1886.....		43,822
1887.....		45,314
1888.....		48,203
1889.....		49,518
1890.....		50,671
1891.....		52,992
1892.....		53,610
1893.....		53,317
1894.....		52,803
1895.....		52,643
1896.....		53,804
1897.....		54,477
1898.....		52,709
1899.....		55,489
1900.....		56,355
1901.....		58,381
1902.....		56,310
1903.....		58,573
1904.....		58,556

TABLE II.—EXHIBIT OF THE OPERATIONS OF THE SERVICE DURING THE FISCAL YEAR ENDED JUNE 30, 1904.

Ports.	Total number of seamen treated.	Patients in hospital July 1, 1903.	Admitted during the year.	Total number treated in hospital.	Discharged.	Died.	Remain- ing in hospital June 30, 1904.	Number of days relieved in hospital.	Number of seamen notified for relief.	Number of times seamen were notified.	Number of persons examined physically, including pilots.	Amount expended.	Tonnage tax collected.
Grand total	58,556	902	13,401	14,308	12,775	491	1,037	415,392	44,233	72,967	5,783	\$1,168,252.86	\$328,714.27
Advertising, Ala.	7		7	7	6		1	151				116.17	
Albany, N. Y.	63		25	25	29		1	288	38	67		374.88	78.00
Apalachicola, Fla.	182	1	40	41	36		3	706	142	147		685.00	1,028.62
Astland, Wis.	183	2	22	24	24			233	158	302		982.80	
Astoria, Ore.	155		36	36	33		2	363	119	241	1	583.00	
Baltimore, Md.	1,435	36	492	528	461	26	41	18,350	907	1,254	27	1,538.49	5,905.74
Bangor, Me.	84		4	4	1		3	67	80	92	202	24,053.87	45,464.91
Barnstable, Mass., and subports.	157								157	292	8	340.00	440.70
Bath, Me.	28		1	1	1			6	28	28	5	302.00	116.10
Beaufort, N. C.	118								117	187	54	405.40	
Beaufort, S. C.	33								33	50		130.00	
Belfast, Me.													
Bismarck, N. Dak.	9		8	8	7	1		146	1	1		372.87	
Books.												197.83	
Boothbay Harbor, Me.	143		10	10	9	1		133	130	130	6	510.85	
Bozton, Mass.	2,864	36	694	730	668	18	44	18,001	1,924	3,444	217	23,575.36	74,952.60
Bridgeton, R. I.													
Bridgeport, Conn.	22	1	18	19	19			268	3	3		462.50	
Brownsville, Tex.													
Brunswick, Ga.	301	2	54	56	52	3	1	1,304	245	283		2,200.76	186.09
Buffalo, N. Y.	2,522	17	480	497	469	13	15	7,741	2,025	3,212	62	15,335.24	4,938.28
Burlington, Iowa.	12	1	10	11	11			186	1	1		165.40	
Burlington, Vt.													
Caño, Ill.	775	13	315	328	302	6	20	5,563	447	580		12,064.19	186.09
Cambridge, Md.	65		24	24	23	1		283	41	54		559.30	
Cape Vincent.													
Castine, Me.	9											25.00	210.72
Cedar Keys, Fla.	277	2	87	89	81	4	4	1,446	275	423		283.86	24.87
Charleston, S. C.	715		6	6	6			104	696	945	76	2,796.16	1,774.80
Chattanooga, Tenn.	10											273.60	4,320.94
Chicago, Ill.	3,003	30	535	585	537	22	26	17,162	2,418	2,901	99	28,715.74	
Cincinnati, Ohio.	662	19	224	239	218	10	11	5,911	1,804	2,402	83	11,536.78	1,041.60
Cleveland, Ohio.	2,302	25	423	448	403	17	28	13,754	1,804	2,402		16,091.03	
Cocoa Bay.													
Corpus Christi, Tex.	16		2	2	2			21	14	41	2	244.39	15.60

Crisfield, Md.	141								141	169			\$310.47
Darien, Ga.	12								29	37	10		207.10
Darien, Ga. Breakwater, Del.	124								125	127	23		1,094.10
Dawson, Mo.	1,652	28	356	382	361	4	17		1,250	2,744	12		17,657.29
Dubuque, Iowa.	28	1	11	12	37	1			16	22	12		838.15
Duluth, Minn.	302	2	33	37	37				265	340	23		832.45
Dutch Harbor, Alaska.													322.45
Eastport, Me.	5									8			17.25
Edenton, N. C.	97	1	3	1	3				4	167			218.00
Edgartown, Mass.	3								3	6			6.25
Elizabeth City, N. C.	50								50	62	128		79.17
Ellsworth, Me.	17								17	57			300.00
Epidemic duty													300.00
Erie, Pa.	153	3	32	35	35				118	173	10		10,781.51
Escanaba, Mich.	92	13	13	13	13				79	79	6		1,029.70
Eureka, Cal.	124	1	25	26	25				98	110	13		586.00
Evansville, Ind.	1,104	9	171	180	165	3	12		924	1,223	15		690.07
El Paso, Tex.													12,183.53
Fall River, Mass.													712.00
Fernandina, Fla.	164	21	21	20	1	1			163	200			26.40
Fredericksburg, Va.	12	1	1	1					10	15			147.60
Fort Stanton, N. Mex.	386	150	236	132	62	192							706.45
Fuel, lights, and water.													147.60
Furniture and repairs.													96,818.29
Galveston, Ohio.	224	7	98	105	100	2	3		119	288	17		70,550.95
Galveston, Tex.	827	7	162	160	151	8	10		3,998	658			4,233.41
Georgetown, S. C.	263	72	72	72	67	2	3		660	221	98		2,270.74
Gloucester, Mass.	274	1	31	32	28	2	2		615	270	2		6,120.94
Grand Haven, Mich.	27		13	13	13				242	353	27		1,775.96
Great Falls													1,418.78
Green Bay, Wis.	99	15	15	14		1			14	37	81		1,136.82
Government Hospital for Insane,													641.30
Washington, D. C.													21.81
Hartford, Conn.	42	34	8	42	2	4	36		76	91	8		592.85
Heating apparatus													8,324.79
Honolulu, Hawaii.	12												386.00
Honolulu, Wash.	555	9	166	175	155	4	16						5,342.32
Houghton, Mich.	71		31	31	31				380	705	10		9,583.69
Hygienic Laboratory, Washington,	31		7	7	7				40	68	1		962.38
D. C.									24	34	8		495.70
Immigration service.													45,902.48
Jackville, Fla.	346	5	105	110	107	2	1		236	265			57,752.09
Jamez, Alaska.	130	1	23	24	23				106	492	4		2,216.99
Ketchikan, Alaska.	20								20	40			2,171.29
Key West, Fla.	2,125	9	138	147	125	8	14		1,978	2,819	9		225.00
La Crosse, Wis.	207	4	46	50	44	1	5		5,037	2,940	1		9,341.61
Little Rock, Ark.	13								683	240			1,256.06
Los Angeles, Cal.	479	9	145	154	139	6	9		12	31	1		246.00
Louisville, Ky.	1,203	16	319	335	305	14	16		325	1,195			6,605.00
Ludington, Mich.	38		11	11	10	1			868	1,284	14		17,792.53
									27	33	62		321.19

^a Amount tonnage tax actually received in the Treasury, \$825,911.41.

TABLE II.—EXHIBIT OF THE OPERATIONS OF THE SERVICE DURING THE FISCAL YEAR ENDED JUNE 30, 1904.—Continued.

Ports.	Total number of sea-men treated, 1903.	Patients in hospital July 1, 1903.	Admitted during the year.	Total number treated in hospital.	Discharged.	Died.	Remain- ing in hospital June 30, 1904.	Number of days' relief in hospital.	Number of sea-men fur- nished office re- lief.	Number of times office re- lief was fur- nished.	Number of persons ex- amined physi- cally, in- cluding pilots.	Amount expended.	Tonnage tax collected.
Machias, Me.	75		15	15	15			385	60	158	749	\$703.20	\$153.57
Manila, P. I.	125		14	14	12	1	1	256	111	168	25	560.37	
Manitowoc, Wis.	119	1	67	68	65	1	2	1,101	51	58		1,452.02	
Marblehead, Mass.													66.66
Marquette, Mich.	62		8	8	8			142	54	70	17	512.85	
Marshfield, Oreg.	85		20	20	20			222	65	176	10	657.60	
Memphis, Tenn.	1,904	8	564	572	538	18	16	7,202	1,332	1,540	9	13,623.65	
Menominee, Mich.	30		5	5	3		2	211	25	27		516.05	
Milwaukee, Wis.	1,125	8	256	264	251	3	10	5,598	861	1,347	71	6,744.57	
Miscellaneous												1,004.30	
Mobile, Ala.	1,709	25	361	386	343	10	33	11,864	1,323	2,997	75	16,374.46	15,103.17
Nashville, Tenn.	61	1	4	5	5			36	5	6		383.63	
Natchez, Miss.	19		7	7	7			67	12	20	14	368.30	
Newark, N. J.													
New Bedford, Mass.	92		3	3	2		1	68	89	157		411.58	1,079.04
Newbern, N. C.	377		42	42	39	3		619	335	666	16	1,298.03	1,386.21
New Haven, Conn.	52	4	31	35	32	1	2	675	17	27	23	1,140.94	293.28
New London, Conn.	84		1	25	26		1	404	58	92		1,404.88	34.53
New Orleans, La.	2,033	39	391	430	386	11	33	12,728	1,003	2,508	86	23,708.54	65,856.31
Newport, Ark.	49								49	69		361.94	
Newport, R. I.	86	6	49	55	48	3	4	952	31	37		1,760.25	38.10
Newport, Vt.													38.56
Newport News, Va.	183		7	7	7			57	186	215	29	143.45	7,289.82
New York, N. Y.	4,748	62	1,094	1,156	1,006	40	110	35,649	3,662	6,373	1,928	43,066.78	300,153.15
Niagara Falls													145.26
Omaha, Neb.													
Oneida, N. Y.	43		14	14	14			181	29	62		8,338.31	5,264.34
Oregon, Va.	1,864	7	328	335	311	13	11	4,295	1,559	2,022	107	10,396.15	789.90
Oregon, N. Y.	79		7	8	7			202	72	157	27	559.05	1,369.86
Oregon, Ky.	74		8	8	7	1		141	66	101	16	737.20	1,369.86
Paducah, Ky.	183								183	563		421.00	
Panama, Fla.	111	2	109	111	106	3	3	1,967			11	2,066.94	20,633.65
Perth Amboy, N. J.													2,049.39
Philadelphia, Pa.	1,460	13	373	386	366	4	16	7,720	1,083	1,522	211	15,466.53	62,541.19
Philippine Islands.													3,065.37
Pittsburg, Pa.	930	9	152	161	144	9	8	3,122	769	900	22	8,712.02	3,061.05
Pittsburg, N. Y.													4.83
Plymouth, N. Y.													

Ponce, P. R.	24	1	3	4	4	4	4	42	20	27	64	\$101.25
Port Huron, Mich.	134		10	10	8	261	1	252	124	350		657.00
Portland, Me.	203	20	273	263	2	5	27	10,388	508	1,047		1,047.61
Portland, Ore.	657	4	135	139	131	2	6	3,253	518	1,071		4,584.95
Portsmouth, N. H.	41	1	10	11	11	11		207	30	30		4,407.00
Port Tampa, Fla.	155	5	75	75	75	351	4	1,514	75	331		2,160.25
Port Townsend, Wash.	533	30	374	404	76		20	13,463	129	230		23,959.80
Porto Rican ports.												12,915.15
Providence, R. I.	818	6	57	63	57		3	1,362	755	1,777	36	2,868.30
Purveying depot, New York, N. Y.												132,479.85
Railroad transportation, freight charges, etc.												
Richmond, Va.	36	2	8	10	10			271	28	33		15,471.38
Rochester, N. Y.	179		6	6	5		1	73	173	417	14	627.72
Sag Harbor, N. Y.	188		25	25	25			410	133	188	20	713.85
Saginaw, Mich.	68	1	2	3	3			236	95	95		135.50
Salem, Mass.	68		22	22	22			34	34	243	10	5,338.38
San Diego, Ohio	40		1,045	922	5		1	70	34	49	14	2,070.47
San Francisco, Cal.	3,291	85	990	922	40	103		34,173	2,246	5,122	199	32,027.93
San Juan, P. R.	107	5	56	61	54	2	5	1,512	46	52	4	1,419.00
St. Louis, Mo.	1,230	12	259	271	252	9	10	7,065	959	1,754	39	22,552.25
St. Marys, Ga.			14	15	15			251	13	29	1	454.26
St. Paul, Minn.	176	8	86	94	87	4	3	1,037	82	99	8	1,978.54
Sault Ste. Marie, Mich.	1,082	7	272	279	266	5	8	5,574	803	1,059	26	9,024.34
Savannah, Ga.	1,278	9	221	230	212	5	13	4,291	1,048	1,790	147	7,442.30
Seattle, Wash.	53	1	5	6	6			126	47	80	1	434.35
Shelbygan, Wis.												
Shieldsboro, Miss.												
Shreveport, La.	13		6	6	6			54	7	11		654.00
Sitka, Alaska.	14		13	13	13			304	1	9		597.00
Solomons, Md.	395		17	17	16	1		185	378	439		705.66
Stationery division, Treasury Department.												
Stoughton, Conn.												1,639.36
Sturgeon Bay, Wis.	23								23	56	47	312.85
Superior, Wis.	226	2	41	43	39	1	3	763	183	288		1,005.99
Somers Point, N. J.	2								2	9		10.50
Tacoma, Wash.	148		44	44	43	1		662	104	142	17	1,310.55
Tampa, Fla.												
Tappanhook, Va., and subports.	231	3	153	156	154	1	1	1,503	75	89		2,415.10
Toledo, Ohio.	308	7	100	107	102	2	3	1,601	201	553	19	1,007.60
Traveling expenses												8,573.39
Vicksburg, Miss.	145		70	72	71			914	73	109		1,539.20
Vineyard Haven, Mass.	228	8	74	82	69	2	11	2,821	146	158	9	10,160.27
Waldoboro, Me.												
Washington, D. C.	154	4	29	33	29	1	3	1,185	121	184	11	39,607.36
Wheeling, W. Va.	34	1	30	31	28	2	1	251	3	3		668.65
Wilmington, Del.												
Wilmington, N. C.	221	8	62	70	65	1	4	2,469	157	187	11	9,039.65
												7,529.55
												2,280.15

TABLE II.—EXHIBIT OF THE OPERATIONS OF THE SERVICE DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

Ports.	Total number of sea-men treated.	Patients in hospital July 1, 1903.	Admitted during the year.	Total number treated in hospital.	Discharged.	Died.	Remain-ing in hospital June 30, 1904.	Number of days' relief in hospital.	Number of sea-men fur-nished office re-lief.	Number of times office re-lief was fur-nished.	Number of persons examined phys-ically, in-cluding pilots.	Amount expended.	Tonnage tax collected.
Wiscasset, Me.	30	1	7	8	8			121	22	25			279.48
Cape Charles Quarantine.													
Cape Fear Quarantine.	1		1	1	1			14			16		
Delaware Breakwater Quarantine.	8		8	8	6			87					
Gulf Quarantine.	1		1	1	1	2		15					
Port Townsend Quarantine.	3	1		3	3			68					
Reedy Island Quarantine.	8		5	8	7			130					
San Francisco Quarantine.	3		3	3	3	1		40	1	1			
Savannah Quarantine.	12		11	11	11			131					
Santa Rosa Quarantine.	19		19	19	18	1							

TABLE III.—SUMMARY OF PHYSICAL EXAMINATIONS OF SEAMEN MADE BY OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE DURING THE FISCAL YEAR ENDED JUNE 30, 1904.

Summary of examinations and causes of rejection.	Total.	Pilots.	Revenue-Cutter Service.	Life-Saving Service.	Coast and Geodetic Survey.	Light-House Service.	Merchant marine.	Foreign seamen.	Immigration Service.	Civil Service Commission.	Isthmian Canal Commission.
Summary of examinations:											
Total number examined.....	5,783	1,812	728	1,161	53	12	604	6	2	1,403	2
Number passed.....	5,303	1,686	600	1,124	47	9	516	3	2	1,314	2
Number rejected.....	480	126	128	37	6	3	88	3	...	89	...
Causes of rejection:											
Abscess, connective tissue.....	1	1									
Albuminuria.....	1	1									
Alcoholism.....	2		1		1						
Aneurism, aorta.....	2						2				
Ankylosis, joints.....	2						1			1	
Asthma.....	2		2								
Atrophy, leg.....	1									1	
Bronchitis.....	8		4	1		2				1	
Cicatrix.....	1										
Color blindness.....	68	45	12	2		1	7			1	
Conjunctivitis.....	1							1			
Coryza.....	1		1								
Deafness.....	3	1	2								
Debility.....	1									1	
Deformity, amputations.....	4	1	1							2	
Defective vision.....	125	53	28	9	4		27			4	
Degeneration of arteries, aorta.....	1	1									
Dysentery.....	1						1				
Eczema.....	1		1								
Flatfoot.....	1		1								
General eruption.....	1		1								
Gonorrhea.....	4		3				1				
Heart—											
Disordered action.....	7		1	3			2			1	
Fatty degeneration.....	1	1									
Disease of—											
Mitral.....	76	8	8	4			17			39	
Aortic.....	11	4	4				1			2	
Aortic and mitral.....	1						1				
Pulmonary.....	3									3	
Hernia.....	30	4	8	1			4			13	
Impetigo contagiosa.....	1		1								
Inflammation of—											
Larynx.....	2		2								
Lymph glands.....	5		3				2				
Tonsils.....	3		2	1							
Injured shoulder.....	1						1				
Insubordination.....	1		1								
Jaundice.....	1										
Malarial fever, intermittent.....	1		1				1				
Myelitis, diffuse.....	1									1	
Oedema.....	1									1	
Old age.....	2									2	
Otitis media, suppurative.....	1			1							
Paralysis, hemiplegia.....	1									1	
Paresis.....	2			2							
Pediculosis.....	1		1								
Piles.....	3		1	2							
Poor physical condition.....	11		4	3						4	
Psoriasis.....	3		1	2							
Refused examination.....	2		1		1						
Retention of urine.....	1			1							
Rheumatic fever.....	1						1				
Rheumatism.....	1			1							
Scabies.....	1	1									
Scoliosis.....	1									1	
Senility.....	2	1								1	
Soft chancre.....	4		4								
Stricture of urethra.....	1						1				
Syphilis—											
Primary.....	2		1					1			
Secondary.....	4		2				1	1			
Tallipes, valgus.....	1									1	
Temperature, abnormal.....	3		1				2				
Tinea versicolor.....	1		1								
Trachoma.....	5	1					4				
Tubercle.....	19	2	8	1							

TABLE III.—SUMMARY OF PHYSICAL EXAMINATIONS OF SEAMEN MADE BY OFFICERS OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

Summary of examinations and causes of rejection.	Total.	Pilots.	Revenue-Cutter Service.	Life-Saving Service.	Coast and Geodetic Survey.	Light-House Service.	Merchant marine.	Foreign seamen.	Immigration Service.	Civil Service Commission.	Isthmian Canal Commission.
Tumor of testicle.....	1									1	
Ulcer of—											
Penis.....	2		2								
Tongue.....	1						1				
Urethral fistula.....	1		1								
Varicocele.....	11			2							
Varicose veins.....	10		2	1			1			6	
Veneral warts.....	1		1								
Wound.....	2						2				

TABLE IV.—STATEMENT, BY DISTRICTS, OF THE NUMBER OF PATIENTS TREATED DURING THE YEAR ENDED JUNE 30, 1903.

District.	Total cases.	Patients in hospital July 1, 1902.	Admitted during the year.	Total number cases treated in hospital.	Discharged.	Died.	Patients in hospital June 30, 1903.	Number of days relief in hospital.	Number of seamen furnished office relief.	Number of times office relief was furnished.
Total.....	58,556	902	13,401	14,303	12,775	491	1,037	415,292	44,253	72,987
Atlantic.....	20,797	273	4,603	4,876	4,382	155	339	134,037	15,921	25,270
West Indies.....	131	6	50	65	58	2	5	1,554	66	79
Gulf.....	7,329	87	1,271	1,358	1,221	40	97	37,391	5,971	10,295
Ohio.....	4,441	58	1,004	1,062	971	40	51	22,816	3,379	5,146
Mississippi.....	4,419	42	1,305	1,347	1,258	36	53	22,361	3,072	4,396
Great Lakes.....	13,290	133	2,640	2,773	2,584	73	116	65,434	10,517	16,079
Pacific.....	7,512	289	2,299	2,588	2,091	137	360	126,524	4,924	10,991
Pacific islands.....	555	9	166	175	155	4	16	4,569	380	705
Quarantine stations.....	82	5	54	59	55	4	.....	606	23	26

TABLE V.—RATIO OF PATIENTS TREATED IN HOSPITAL IN EACH DISTRICT.

District.	Per cent of patients treated in hospital.	District.	Per cent of patients treated in hospital.
Atlantic.....	23.44	Great Lakes.....	20.85
West Indies.....	49.61	Pacific.....	34.31
Gulf.....	18.52	Pacific islands.....	31.53
Ohio.....	23.91	Quarantine stations.....	71.70
Mississippi.....	30.48		

TABLE VI.—AVERAGE DURATION OF TREATMENT IN HOSPITAL IN EACH DISTRICT.

District.	Average number of days' relief furnished to each patient.	District.	Average number of days' relief furnished to each patient.
Atlantic.....	27.48	Great Lakes.....	23.61
West Indies.....	23.90	Pacific.....	50.81
Gulf.....	27.52	Pacific islands.....	28.10
Ohio.....	21.48	Quarantine stations.....	10.28
Mississippi.....	16.62		

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904.

DISTRICT OF THE ATLANTIC.

Diseases.	Number of cases.								
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.	Total treated in hospital and dispensary.
TOTAL CASES.....	273	4,603	2,967	1,559	126	155	339	15,921	20,797
General Diseases.....	87	1,888	1,070	678	49	56	122	6,050	8,025
Smallpox.....		1			1				1
Cowpox.....								15	15
Chicken pox.....		1	1						1
Measles.....	2	22	21		1		2	7	31
Rubella.....		1		1				1	2
Influenza.....	2	128	103	26		1		433	563
Mumps.....		18	17	1				25	43
Diphtheria.....		12	12					1	13
Cerebro-spinal fever.....						1			1
Simple continued fever.....		6	4	2					10
Enteric fever.....	5	152	115	17		8	17	14	171
Choleraic diarrhea.....		3	1	2				13	16
Epidemic diarrhea.....								1	1
Dysentery.....	1	33	28	6				49	83
Beriberi.....		9	5	4					9
Malarial fever:									
Intermittent.....	12	256	230	25	3	4	6	718	966
Remittent.....	2	96	76	17		3	2	42	140
Erysipelas.....	1	12	10	3				9	22
Phlegmonous.....		2		1			1		2
Pyæmia.....		1	1					1	2
Tetanus.....		1				1			1
Tubercle.....	15	194	6	128	25	31	19	74	283
Syphilis:									
Primary.....		22	2	15	2		3	143	165
Secondary.....	17	218	6	209	3		17	843	1,078
Tertiary.....		6		3			3	12	18
Gonorrhæa.....	12	237	141	91	1	1	15	1,047	2,196
Diseases dependent on animal parasites:									
Tænia solium.....	1	4	5					4	9
Tænia mediocanellata.....		1	1					1	2
Ascaris lumbricoides.....								1	1
Oxyuris vermicularis.....		1	1					1	2
Pediculus vestimentalis.....								4	4
Phthirus inguinalis.....								15	15
Sarcoptes scabiei.....		12	12					142	154
Uncinariasis.....		1					1		1
Diseases dependent on vegetable parasites:									
Achorion Schönleini.....		1		1				1	2
Trichophyton tonsurans.....		1	1					18	19
Microsporon furfur.....								2	2
EFFECTS OF VEGETABLE POISONS:									
Tobacco.....								2	2
Rhus toxicodendron.....								4	4
Coal gas.....		1	1					4	5
Effects of inorganic poisons:									
Mercury.....		1		1				2	3
Iodine.....		1	1						1
Effects of the presence of foreign bodies.....		2	1			1		9	11
Effects of mechanical injuries.....		5	2	2				6	11
Effects of chemical agents.....		1	1					2	3
Effects of excessive exertions and strain.....								1	1
Scurvy.....	1	1	2					2	4
Alcoholism.....		48	39	7	1		1	74	122
Delirium tremens.....		1	1					1	2
Rheumatic fever.....	3	66	42	16		1	10	16	85
Rheumatism.....	10	252	156	83	6		17	1,121	1,383
Gout.....		3		3				13	16
Osteoarthritis.....		1					1		1
Cyst:									
Serous.....								2	2
Mucous.....		3	3					1	4

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE ATLANTIC—Continued.

Diseases.	Number of cases.							Total treated in hospital and dispensary.
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	
Cyst—Continued.								
Sebaceous.....		7	7					29
Bursal.....		1	1					1
Dermoid.....		2					2	2
Chalazion.....								4
NEW GROWTH, NONMALIGNANT:								
Lipoma.....	1	1	2					9
Fibroma.....								1
Chondroma.....		1	1					2
Ivory exostosis of tibia.....								1
Myxoma.....		1	1					1
Condyloma.....		1	1					11
Papilloma.....		3	1	2				48
Pterygium.....		1			1			6
NEW GROWTH, MALIGNANT:								
Sarcoma.....		3				2	1	3
Epithelioma.....		1					1	1
Carcinoma.....		2		1	1			5
Squamous carcinoma.....		2	1		1			6
Anemia.....		4	1	3				9
Purpura.....								1
Diabetes mellitus.....		4		2	1	1		15
Diabetes insipidus.....		2		2				2
Congenital malformations.....		1					1	3
Debility.....	1	13	6	5		1	2	151
Old age.....	1					1		2
Local diseases.....								
DISEASES OF THE NERVOUS SYSTEM.....	55	111	30	44	10	16	66	619
Of the nerves—								
Inflammation—								
Neuritis.....	2	14	7	9			15	31
Multiple neuritis.....		5	2		1		1	6
Sciatica.....		1		1				1
Of the spinal cord and membranes—								
cord—								
Inflammation—								
Anterior poliomyelitis.....	1						1	1
Hemorrhage.....	2					2		2
Degeneration—								
Of anterior cornua.....		1					1	2
Of lateral columns.....	2	3		1	1		3	5
Of posterior columns.....	2	4		3			2	8
Of the brain and its membranes—								
brain—								
Inflammation.....								2
Sclerosis.....	2	2			2		2	4
Hemorrhage.....	1	7		6		2	5	13
Hyperæmia.....							1	1
Functional nervous disorders with other diseases of undetermined nature—								
Apoplexy.....		2		1		1		5
Paralysis—								
Paraplegia.....	3						3	3
Hemiplegia.....	4	12		2		6	8	20
Local paralysis.....		4	1	2			1	15
Incomplete paralysis.....		1			1			5
Spasm.....								5
Torticollis.....		1					1	4
Eclampsia.....		1	1					1
Epilepsy.....		4		2	1		1	18
Vertigo.....		5	1	4				13
Headache.....		1					1	56
Hyperæsthesia.....								2
Neuralgia.....		18	10	7			1	259

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE ATLANTIC—Continued.

Diseases.	Number of cases.							
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.	Treated at dispen- sary.
DISEASES OF THE NERVOUS SYSTEM—Con.								
Functional nervous disorders with other diseases of undetermined na- ture—Continued.								
Hysteria.....								1
Hiccough.....								1
Nervous weakness.....		11	4	5	1	1		81
Mental diseases—								
Mania.....	11	3				1	13	1
Melancholia.....	14	2	2				14	1
Dementia.....	8	3	1			2	8	
Mental stupor.....	1		1					
General paralysis of the insane.....	2	1			1		2	
Delusional insanity.....		5		1	3		1	
DISEASES OF THE EYE.....	4	34	17	11	4		6	196
Conjunctivitis—								
Catarrhal.....		2	2					
Acute.....		5	3	2				125
Chronic.....		2						3
Cedema of conjunctiva.....		1	1					
Chronic hyperæmia of conjunctiva.....								1
Degeneration of conjunctiva.....								1
Keratitis.....	1	1	1				1	1
Ulceration of cornea.....	1	5	1	3	1		1	6
Opacity of cornea.....								1
Iritis.....		10	5	3			2	19
Choroiditis.....		1			1			
Glaucoma.....	1	1		1	1			1
Atrophy and degeneration of optic nerve or papilla.....		2		1	1			4
Retinitis.....		1		1				2
Lenticular cataract.....	1	1					2	2
Amblyopia.....								2
Functional night blindness.....								2
Ametropia.....								6
Inflammation of lachrymal glands.....								2
Obstruction of nasal duct.....								2
Blepharitis marginalis.....		1	1					2
Sty.....								12
Trichiasis.....		1	1					1
Cedema of eyelids.....								1
DISEASES OF THE EAR.....		21	7	9	3		2	99
Inflammation of the external meatus—								
Acute.....		3	1	2				5
Chronic.....		1		1				1
Abscess.....		1	1					
Accumulation in external meatus of wax or epidermis.....								34
Inflammation of the middle ear—								
Nonsuppurative.....		12	5	4	1		2	16
Suppurative.....		1		1				22
Within the mastoid cells.....								2
Ulceration of membrana tympani.....								4
Perforation of membrana tympani.....		2		1	1			3
Obstruction of Eustachian tube.....								3
Tinnitus.....		1			1			2
Deafness.....								7
DISEASES OF THE NOSE.....		5	4				1	151
Inflammation of soft parts.....		2	1				1	130
Diseases of septum, deviations.....		1	1					1
Epistaxis.....		2	2					8
Inflammation of the accessory sinuses.....								2
Inflammation of the naso-pharynx.....								10

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE ATLANTIC—Continued.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.
DISEASES OF THE CIRCULATORY SYSTEM...	6	115	14	70	9	13	15	151
Pericarditis.....		1						
Valvular disease—								
Aortic.....	1	9		9			1	13
Mitral.....		40	2	26	1	5	6	50
Aortic and mitral.....	2	22		11	4	6	3	8
Degeneration of heart, fatty.....								3
Hypertrophy of heart.....		3		2	1			1
Dilatation of heart.....	1	2		2			1	4
Calcareous degeneration of coronary artery.....		1		1				1
Angina pectoris.....		1						1
Syncope.....								10
Disordered action of the heart.....								5
Abnormal slowness.....								1
Abnormal rapidity.....		2	1	1				9
Irregularity.....		1		1				7
Arteritis.....		2		2				1
Degeneration of arteries.....		1		1				1
Arterio-capillary fibrosis.....		2		2				1
Aneurism of arteries.....		7		1	3	1	2	7
Obstruction of arteries, thrombosis.....	2	2		2		1	1	2
Phlebitis.....		4	2	2				1
Varix.....		15	9	6				31
Arterio-venous aneurism.....								3
DISEASES OF THE RESPIRATORY SYSTEM...	9	353	169	139	11	34	9	1,476
Inflammation of mucous membrane of larynx—								
Catarrhal, acute.....		6	4	2				26
Catarrhal, chronic.....								3
Bronchitis—								
Catarrhal, acute.....	4	86	56	31	1	2		1,036
Catarrhal, chronic.....		67	9	51	4		3	299
Dilatation of bronchi.....		1		1				1
Spasmodic asthma.....		34	3	26	1	2	2	33
Hæmoptysis.....		1		1				7
Pneumonia.....	3	101	67	9		28		6
Broncho-pneumonia.....	1		1					1
Abscess of lung.....								2
Gangrene.....		1					1	1
Chronic interstitial inflammation.....		1		1				1
Phthisis—								
Acute.....		1		1				1
Chronic.....		3		1	2			3
Tubercular.....		1			1			4
Emphysema, vesicular.....		1					1	2
Collier's phthisis.....		1		1				3
Pleurisy—								
Acute.....	1	40	28	9		2	2	54
Chronic.....		5	1	4				7
Empyema.....		3		1	2			1
DISEASES OF THE DIGESTIVE SYSTEM...	20	437	328	79	14	14	22	2,136
Inflammation of the lips.....								2
Ulceration of the lips.....								4
Inflammation of the mouth.....		1		1				9
Ulceration of the mouth.....								4
Inflammation of the dental pulp.....								1
Suppuration of the dental pulp.....								1
Caries of dentine and cementum.....								52
Inflammation of dental periosteum.....		1	1					1
Abscess of dental periosteum.....		2	2					12
Inflammation of gums and alveoli.....								7
Suppuration of alveoli.....								1
Ulceration of gums and alveoli.....								4
Necrosis of the alveoli.....								1
Toothache.....								46

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE ATLANTIC—Continued.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.
DISEASES OF THE DIGESTIVE SYSTEM—Con.								
Inflammation of the tongue		2	2					2
Ulceration of the tongue								7
Sore throat		4	2	2				66
Ulceration of tonsils		1	1					70
Inflammation of tonsils—								1
Follicular		61	54	6	1			180
Suppuration		20	17	2		1		13
Hypertrophy of tonsils		2	2					2
Elongated uvula								3
Inflammation of salivary glands		1				1		1
Salivation		1		1				2
Inflammation of the pharynx—								1
Catarrhal		5	5					126
Granular								2
Follicular		4	4					15
Ulceration of pharynx	1	1	1	1				1
Stricture of esophagus								2
Inflammation of the stomach, catarrhal	2	63	39	19		2	5	107
Ulceration of the stomach, superficial		3	1	1	1			2
Hemorrhage of the stomach		1	1					1
Dilatation of the stomach		1					1	1
Indigestion		17	13	4				536
Gastralgia		2		2				9
Loss of appetite								5
Inflammation of the intestines—								
Enteritis		28	23	3		2	56	84
Typhlitis	4	22	15	5	2	1	3	5
Colitis								6
Catarrhal		5	4	1				28
Hemorrhage of the intestines								1
Concretions		1	1					1
Fecal accumulation		3	3					28
Hernia	6	54	46	6	5	1	2	262
Volvulus		2	1			1		2
Obstruction of the intestines	1	2	1			2		3
Intestinal dyspepsia		1		1				9
Constipation		12	12					264
Colic		5	5					15
Diarrhea		28	22	3			3	87
Enteralgia								3
Inflammation of the rectum		2	1	1				1
Periproctitis, abscess	2	5	3	2		1	1	7
Fissure of the anus		6	4	2				6
Fistula in ano	2	7	6	3				12
Prolapse of the rectum		2	2					2
Ulceration of the anus								1
Hemorrhage of rectum								2
Piles—								
Internal		10	7	1			2	19
External		10	5	2	3			57
Mixed		8	7	1				4
Pruritus ani								1
Inflammation of the liver—								
Acute	1	4	1	2	1	1		2
Chronic		4		1		1	2	6
Hypersæmia of the liver		1	1					23
Atrophy of the liver		1					1	1
Hypertrophy of the liver		3		1	1	1		3
Jaundice		4	3	1				8
Inflammation of hepatic ducts and gall bladder	1	9	7	3				1
Calculi		1		1				2
Biliary colic		1	1					1
Inflammation of the peritoneum		3	2			1		1
Accumulation of bile								2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE ATLANTIC—Continued.

Diseases.	Number of cases.							
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.	Total treated in hospital and dis- pensary.
DISEASES OF THE LYMPHATIC SYSTEM.	12	185	130	42	6	...	10	504
Lardaceous spleen.								1
Hypertrophy of spleen.								2
Inflammation of lymph glands.	10	140	108	31	5		6	420
Suppuration.	2	42	30	10	1		3	76
Hypertrophy of lymph glands.		1		1				1
Inflammation of lymphatics.		1	1					3
Dilatation of lymphatics.		1					1	1
DISEASES OF THE THYROID BODY.								3
Goiter.								3
DISEASES OF THE SUPRARENAL CAPSULES.		1				1		1
Addison's disease.		1				1		1
DISEASES OF THE URINARY SYSTEM.	12	80	18	55	4	10	14	330
Acute nephritis.		10	2	6		1	1	14
Bright's disease.	2	7		5	2		2	15
Chronic nephritis.	4	26		19	2	4	5	42
Granular kidney.	4	18		13		5	4	25
Lardaceous kidney.		1					1	1
Movable kidney.								1
Calculus in kidney.		2	1	1				4
Calculus in ureter.		1	1					1
Glycosuria.								3
Suppression of urine.								2
Hematuria.		3	3					8
Albuminuria.								1
Lithuria.								2
Inflammation of bladder—								
Acute.		10	6	4				75
Subacute.		1	1					65
Chronic.	1	6		6			1	15
Calculus of bladder.								6
Irritability of bladder.		2	1	1				13
Retention of urine.	1	2	3					2
Incontinence of urine.								6
DISEASES OF THE GENERATIVE SYSTEM.	13	331	198	112	7	1	26	1,504
Urethritis.		1		1				42
Gleet.		2	2					23
Ulcer of the urethra.								1
Hemorrhage of the urethra.								1
Stricture of urethra—								
Organic.	1	53	19	27	1	1	6	84
Spasmodic.		1	1					1
Urethral fistula.		3		2			1	4
Extravasation of urine.	1	1	1	1				2
Inflammation of the prostate, acute.		2		2				2
Prostatorrhea.		1		1				1
Hypertrophy of the prostate.	1	5		6				13
Prostitis.								3
Phimosis.		14	12	2				18
Paraphimosis.		9	6	3				10
Inflammation of the glans of the penis.		3	2	1				23
Abscess of penis.								1
Ulcer of penis.	2	57	34	23			2	118
Oedema of penis.								1
Soft chancre.	4	121	81	27	4		13	643
Abscess of the scrotum.		2		1			1	2
Inflammation of the spermatic cord.		1		1				4
Hydrocele of the spermatic cord.		2	2					3
Varicocele.	1	12	8	1	2		2	38
Hydrocele of tunica vaginalis.	1	7	6	2				9
Inflammation of the testicle.		4	3	1				74
Acute orchitis.		18	14	3			1	9
Chronic orchitis.		1	1	1				3
Epididymitis.	2	11	7	6				27
Abscess of testicle.								1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE ATLANTIC—Continued.

Diseases.	Number of cases.								
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.	Treated at dispen- sary.	Total treated in hospital and dis- pensary.
DISEASES OF THE GENERATIVE SYSTEM—Continued.									
Spermatorrhea								10	10
Impotence								3	3
Inflammation of the uterus								1	1
Dysmenorrhea								1	1
Metrorrhagia								1	1
Abscess of areola								1	1
DISEASES OF THE ORGANS OF LOCOMOTION									
Inflammation of the bones—	6	109	71	33	4	2	5	551	666
Osteitis	1	1	2						2
Chronic osteo-mylitis		2	1				1		2
Periostitis	1	8	5	4				7	16
Caries		4		2	1	1			4
Necrosis	1	7	4	3		1		8	16
Ununited fracture or false joint	1	2	2	1					3
Inflammation of joints—									
Acute synovitis		17	9	8				44	61
Chronic synovitis		2			2			6	8
Suppuration		1		1					1
Ankylosis								2	2
Dislocation of articular cartilage								1	1
Loose body in joint		2	1	1					2
Caries of the spine	1						1		1
Psoas, lumbar, and other abscesses	1		1						1
Posterior curvature of spine		1		1					1
Lateral curvature of spine		1		1					1
Inflammation of muscles								1	1
Suppuration of muscles								2	2
Myalgia		35	29	4			2	426	461
Lumbago		10	7	2	1				10
Contracture of fasciæ		1		1					1
Inflammation of tendons		1		1					1
Contraction of tendons								2	2
Inflammation of sheaths of tendons								9	9
Thecal abscess								3	3
Inflammation of bursæ—									
Acute		5	5					13	18
Chronic		1	1					4	5
Abscess of bursæ		4	4						4
Bunion								5	5
Bursal cyst		1		1				11	12
Bursal tumor				1				1	1
Club foot								1	1
Flat foot		3		2			1	5	8
DISEASES OF THE CONNECTIVE TISSUE									
Inflammation	10	98	71	30	2	1	4	257	365
Abscess	3	41	31	9		1	3	99	143
Edema	7	56	39	21	2		1	154	217
		1	1					4	5
DISEASES OF THE SKIN									
Erythema	6	145	83	60	1	1	6	915	1,066
Roseola		2	2					7	9
Pityriasis rosea		1	1						1
Urticaria		1		1					1
Prickly heat		3	3					38	41
Eczema		1		1				6	7
Impetigo		17	5	11			1	171	188
Pityriasis rubra		1	1					3	4
Prurigo								4	5
Lichen								6	6
Psoriasis		1		1				2	3
Herpes		4		4				11	15
Zona		3	2	1				39	42
Pemphigus		5	5					9	14
Dermatitis herpetiformis		2	1		1			3	5
		1					1	1	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE ATLANTIC—Continued.

Diseases.	Number of cases.								Total treated in hospital and dispensary.
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.	
DISEASES OF THE SKIN—Continued:									
Acne.....		1	1					19	20
Sycosis.....								9	9
Seborrhea.....		1		1				2	3
Alopecia.....								1	1
Chilblain.....		1	1					2	3
Ulcer.....	3	59	31	29			2	300	362
Cicatrices.....								2	2
Boil.....	1	16	13	4				171	188
Carbuncle.....	1	9	7	2			1	19	29
Whitlow.....	1	11	9	3				37	49
Onychia.....								19	19
Tylosis.....								1	1
Corn.....		2		1		1		8	10
Cheloid.....								1	1
Wen.....		1	1					17	18
Hyperidrosis.....								1	1
Pruritus.....								3	3
Lupus.....		1		1				3	4
Injuries.....		38	28	7		2	1	48	86
GENERAL INJURIES.....									
Effects of heat—									
Burns and scalds.....		15	15					25	40
Heat stroke.....		5	3	2				10	15
Heat apoplexy.....		1				1			1
Effects of cold.....		6	5				1	4	10
Effects of chemical irritants and corrosives.....		2	1	1				1	3
Multiple injury.....		8	4	3		1		6	14
Suffocation.....		1		1					1
Exhaustion.....								2	2
LOCAL INJURIES.....	33	643	450	190	2	4	30	1,500	2,266
Contusion of nerves.....		1		1					1
Wound of artery.....		2	2					2	4
Contusion of muscles.....		1		1				2	3
Strain of muscles.....		2	1	1				41	43
Contusion of skin.....		1		1				4	5
Abrasion of skin.....	1	7	5	3				11	19
Wound of skin.....		2	2					5	7
Burn or scald of skin.....	2	56	37	16			5	84	142
Frostbite.....		31	27	4				41	72
Effects on the skin of irritants or corrosives.....								2	2
Burn or scald of mucous membrane.....								1	1
Contusion of scalp.....		1	1					3	4
Wound of scalp.....		21	19	2				73	94
With injury to the aponeurosis.....		1	1						1
With injury to the pericranium.....		2	2						2
Contusion of skull.....								1	1
Fracture of the vault of skull.....		3	1	2					3
Fracture of the base of skull.....		1				1			1
Concussion of brain.....		3	1				2	1	4
Contusion of face.....		7	5	1			1	14	21
Wound of face and mouth.....		11	7	3			1	55	66
Fracture of facial bones.....	1	8	1	8				5	14
Contusion of eyelid.....		1	1					5	6
Wound of eyelid.....		5	2	3				4	9
Wound of conjunctiva.....								1	1
Contusion of eyeball.....		2	1	1					2
Foreign bodies in the conjunctiva or cornea.....								27	27
Foreign bodies in the eyeball.....								3	3
Wound of orbit.....								2	2
Wound of pinna.....								2	2
Foreign body in external meatus.....								4	4
Wound of air passages.....								1	1
Gunshot wound.....		2	1	1				2	4

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE ATLANTIC—Continued.

Diseases.	Number of cases.						
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.
LOCAL INJURIES—Continued.							
Fracture of sacrum.....		1		1			1
Wound of kidney.....							1
Contusion of neck.....		1				1	2
Wound of neck.....		2	2				2
Foreign body in the food passages.....							1
Dislocation of spine.....		1				1	1
Contusion of chest.....		16	13	3			58
Dislocation of costal cartilages.....		1	1				1
Fracture of ribs.....	1	30	20	9	1	1	51
Wound of parietes of chest.....		2	2				2
Contusion of back.....	2	19	14	7			35
Sprain of back.....		11	11				21
Wound of back.....							15
Fracture of spine.....		3		2		1	3
Concussion of cord.....		2	1	2			2
Contusion of abdomen.....		3	1	2			5
Wound of parietes of abdomen.....		1	1				3
Contusion of the pelvis.....	2	1	1			1	2
Contusion of the perinæum, scrotum, or penis.....		1	1				1
Wound of the male urethra, perinæum, scrotum, testis, or penis.....		1	1				8
Wound of anus.....		1		1			1
Rupture of urethra.....		1	1				1
Rupture of small intestines.....		1				1	1
Contusion of testicle.....		1	1				1
Contusion of upper extremities.....	2	16	12	6			109
Sprain of shoulder.....		3	1	2			21
Sprain of elbow.....		2		2			7
Sprain of wrist.....		7	5	2			37
Sprain of hand.....		1		1			3
Sprain of thumb.....							8
Sprain of fingers.....							11
Wound of upper extremities.....	6	94	73	24		3	490
Fracture of clavicle.....		9	7	2			1
Fracture of scapula.....		1		1			1
Fracture of humerus.....		1	1				1
Fracture of bones of forearm—							
Radius.....		6	4	2			2
Ulna.....		1	1				1
Both bones.....	2	2	1	3			6
Fracture of carpus, metacarpus, or phalanges.....	1	15	10	6			12
Dislocation of clavicle.....		1	1				1
Dislocation of humerus.....		7	4	3			8
Dislocation of phalanges of fingers.....							1
Dislocation of carpus.....		1	1				1
Injury of bursa.....		1	1				1
Contusion of lower extremities.....	2	58	40	17	1	2	93
Sprain of hip.....		1	1				3
Sprain of knee.....	1	8	6	3			21
Sprain of ankle.....	2	28	20	10			54
Sprain of foot.....		1	1				4
Wound of lower extremities.....	1	50	31	17		1	128
Wound of joint, lower extremities.....		4	2	2			4
Fracture of femur.....	4	6	5	3		2	10
Fracture of cervix femoris.....		1				1	1
Fracture of patella.....	1	5	4	2			3
Fracture of tibia.....		13	10			3	3
Fracture of fibula.....		14	11	2		1	3
Fracture of tibia and fibula.....	3	8	6	3		1	4
Fracture of bones of foot—							
Of the tarsus.....		1		1			2
Of the metatarsus.....		3	1	2			2
Of the phalanges of the toes.....		1	1				1
Dislocation of foot.....	1		1			1	1
Malingering.....		1					1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GULF.

Diseases.	Number of cases.								
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.	Total treated in hospital and dispensary.
TOTAL CASES	87	1,271	761	428	32	40	97	5,971	7,329
General Diseases	35	550	325	197	11	16	36	2,612	3,199
Cowpox.....								38	38
Chicken pox.....								1	1
Measles.....		7	6	1					7
Influenza.....		17	17					67	84
Mumps.....		7	7					1	8
Simple continued fever.....		2	2						2
Enteric fever.....		27	18	3		2	1		27
Choleraic diarrhea.....								5	5
Epidemic diarrhea.....		1	1						1
Dysentery.....		16	14					20	37
Malarial fever:									
Intermittent.....	4	89	86	3	1	1	2	375	466
Remittent.....	2	82	75	5	1	1	2	30	114
Erysipelas.....		3	1					4	7
Tubercle.....		35		23	1	8	3	55	90
Syphilis:									
Primary.....	1	4		5				53	58
Secondary.....	12	96		98	2		8	490	566
Tertiary.....		3		2				2	5
Gonorrhea.....	3	51	39	13	1		1	618	672
Yaws.....		1	1						
Diseases dependent on animal parasites:									
Taenia solium.....								2	2
Ascaris lumbricoides.....		1	1					1	2
Pediculus capitis.....								1	1
Phthirus inguinalis.....								1	1
Sarcoptes scabiei.....		1	1					11	12
Diseases dependent on vegetable parasites:									
Trichophyton tonsurans.....								8	8
Tinea circinata.....								16	16
Tinea versicolor.....								2	2
Effects of animal poisons, insect.....								2	2
Effects of vegetable poisons:									
Ivy.....								2	2
Opium.....		1				1			1
Alcohol.....								4	4
Rhus toxicodendron.....		1	1					2	3
Balsam copaiba.....		1	1						1
Effects of inorganic poisons:									
Lead.....								1	1
Mercury.....								2	2
Ammonia.....								1	1
Effects of the presence of foreign bodies.....								3	3
Effects of chemical agents.....									
Alcoholism.....	1	8	7		2			11	20
Rheumatic fever.....		11	5	4			2	5	16
Rheumatism.....	9	59	30	27	2	1	8	782	830
Gout.....								2	2
Cyst:									
Sebaceous.....								6	6
Chalazion.....								1	1
New growth, nonmalignant:									
Lipoma.....		1	1					2	3
Fibroma.....		1	1						1
Pterygium.....		1	1						1
Lymphadenoma.....		1		1					1
Papilloma.....		1	1					4	5
Condyloma.....		1		1				2	3
New growth, malignant:									
Sarcoma.....	1	1	1	1					2
Carcinoma.....		2				1	1		2
Squamous carcinoma.....								4	4
Epithelioma.....		1					1		1
Myxodema.....								2	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GULF—Continued.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.
Anæmia.....		1	1					
Purpura.....		1				1		
Diabetes mellitus.....								2
Diabetes insipidus.....								1
Debility.....	1	14	6	7			2	68
Old age.....								2
Local Diseases.								
DISEASES OF THE NERVOUS SYSTEM.	5	27	4	18	2	3	5	219
Of the nerves—								
Inflammation, neuritis.....		1					1	3
Of the spinal cord and membranes, cord—								
Inflammation, diffuse.....								4
Hemorrhage.....		2				1	1	2
Degeneration of lateral columns.....	1	1		1				2
Of the brain and its membranes, membranes, hemorrhage.....	2			2				
Of the brain and its membranes, brain—								
Sclerosis.....		1		1				
Softening.....								1
Hemorrhage.....								1
Functional nervous disorders with other diseases of undetermined nature—								
Apoplexy.....								2
Paralysis—								
Hemiplegia.....	2	4		2		1	3	1
Local paralysis.....								1
Incomplete paralysis.....		1		1				1
Spasm.....								1
Torticollis.....								3
Epilepsy.....		3		3				2
Vertigo.....		1	1					4
Headache.....								3
Neuralgia.....		6	3	3				179
Nervous weakness.....		2		2				12
Mental diseases—								
Mania.....		2		2				1
Melancholia.....		1			1			1
Dementia.....		1		1				
Delusional insanity.....		1			1			
DISEASES OF THE EYE.	3	14	7	5	3		2	62
Conjunctivitis.....								
Catarhal, acute.....	1	4	4	1				44
Purulent.....		2	1	1				2
Echymosis of conjunctiva.....				1				2
Keratitis.....		2		1			1	1
Ulceration of cornea.....		1					1	4
Iritis.....	1	1	2					1
Choroiditis.....	1				1			
Lenticular cataract.....		1		1				5
Detachment of retina.....		1		1				1
Ametropia.....		2			2			
Squint.....								1
Chronic dacryo cystitis.....								2
Sty.....								1
DISEASES OF THE EAR.		5	3		1		1	57
Inflammation of the external meatus—								
Acute.....								7
Abscess.....								5
Accumulation in external meatus of wax or epidermis.....		1	1					21

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GULF—Continued.

Diseases.	Number of cases.								
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.	Total treated in hospital and dispensary.
DISEASES OF THE EAR—Continued.									
Inflammation of the middle ear—									
Nonsuppurative.....		1					1	10	11
Suppurative.....		1	1					9	10
Within the mastoid cells.....									3
Tinnitus.....								3	3
Deafness.....		1			1			2	3
DISEASES OF THE NOSE.									
Inflammation of soft parts.....								17	17
Inflammation of framework, caries.....								15	15
Epistaxis.....								1	1
DISEASES OF THE CIRCULATORY SYSTEM.									
Pericarditis.....	2	25	2	12	2	5	6	43	70
Valvular disease—									
Aortic.....		7		4		2	1	3	10
Mitral.....		10		3	2	2	3	9	19
Aortic and mitral.....		1				1		3	4
Dilatation of heart.....								3	3
Angina pectoris.....		3		3				2	5
Disordered action of the heart—									
Abnormal slowness.....								2	2
Abnormal rapidity.....								2	2
Irregularity.....								7	7
Degeneration of arteries.....	2	1		1			2	5	6
Aneurism of arteries.....		1	1						1
Varix.....								4	4
DISEASES OF THE RESPIRATORY SYSTEM.									
Inflammation of mucous membrane of larynx—	1	63	41	16	2	4	1	527	591
Catarrhal, acute.....								9	9
Catarrhal, chronic.....		1		1				1	2
Bronchitis—									
Catarrhal, acute.....		26	20	5	1			470	496
Catarrhal, chronic.....		4		1	1	1	1	9	13
Spasmodic asthma.....	1	1		2				8	10
Hemorrhage of lung.....		1	1						1
Hæmoptysis.....								1	1
Pneumonia.....		17	13	2		2			17
Phthisis—									
Acute.....		2		1		1		6	8
Chronic.....								1	1
Pleurisy—									
Acute.....		10	7	3				22	32
Chronic.....		1		1					1
DISEASES OF THE DIGESTIVE SYSTEM.									
Ulceration of the lips.....	10	105	81	21	2	4	7	799	894
Inflammation of the mouth.....								3	3
Ulceration of the mouth.....		1		1					1
Caries of dentine and cementum.....								30	30
Inflammation of dental periosteum.....	1	1	1			1			2
Abscess of dental periosteum.....								4	4
Inflammation of gums and alveoli.....								1	1
Caries of the alveoli.....								10	10
Toothache.....								27	27
Impaction of teeth.....								1	1
Sore throat.....								18	18
Inflammation of tonsils—									
Follicular.....		3	3					23	26
Suppuration.....								6	6
Hypertrophy of tonsils.....		1	1						1
Elongated uvula.....								1	1
Inflammation of salivary glands.....		1	1						1
Salivation.....								6	6
Inflammation of the pharynx—									
Catarrhal.....								20	20
Follicular.....								6	6

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GULF—Continued.

Diseases.	Number of cases.						
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.
DISEASES OF THE DIGESTIVE SYSTEM—Con.							
Ulceration of pharynx.....							1
Inflammation of the stomach.....		9	7				9
Catarrhal.....		2	2				9
Phlegmonous or suppurative.....		2		1			2
Ulceration of the stomach, superficial.....		15	12	2			308
Indigestion.....							1
Gastralgia.....							7
Loss of appetite.....		1					1
Hyperæmia of stomach.....					1		1
Inflammation of the intestines—							
Enteritis.....		6	5	1			14
Typhlitis.....	3	7	8			2	13
Colitis.....		1	1				1
Catarrhal.....		7	4	2			8
Fæcal accumulation.....		5	4	1			6
Hernia.....	3	5	4	2	1		102
Obstruction of the intestines.....		1		1			1
Intestinal dyspepsia.....		1					23
Constipation.....		4	4				4
Colic.....							4
Diarrhea.....	2	7	8				103
Inflammation of the rectum.....		1		1			2
Periproctitis, abscess.....	1	2	2	1			3
Fissure of the anus.....		7	5	1	1		4
Fistula in ano.....							3
Piles—							
Internal.....		1	1				7
External.....		2	1	1			15
Mixed.....		1	1				12
Pruritus ani.....							2
Inflammation of the liver—							
Acute.....		2		2			4
Chronic.....		1		1			1
Hyperæmia of the liver.....		4	2	2			19
Jaundice.....		3	2	1			3
Biliary colic.....		1	1				6
Inflammation of the peritoneum.....							2
DISEASES OF THE LYMPHATIC SYSTEM	6	54	29	25			59
Inflammation of lymph glands.....	6	48	25	24			56
Suppuration.....		6	4	1			2
Inflammation of lymphatics.....							1
DISEASES OF THE URINARY SYSTEM		17	4	10		2	71
Acute nephritis.....							7
Bright's disease.....		6		5		1	5
Chronic nephritis.....		5		4		1	6
Granular kidney.....							1
Movable kidney.....		1		1			1
Hæmaturia.....							1
Inflammation of bladder—							
Acute.....		5	4			1	32
Chronic.....							10
Irritability of bladder.....							6
Retention of urine.....							1
Incontinence of urine.....							1
DISEASES OF THE GENERATIVE SYSTEM	9	115	66	44	2		12
Gleet.....							3
Stricture of urethra, organic.....	2	18	5	12			3
Urethral fever.....		1		1			1
Inflammation of the prostate, chronic.....		1		1			3
Hypertrophy of the prostate.....		3	2	1			8
Phimosis.....	1						1
Paraphimosis.....							1
Inflammation of the glans of the penis.....							1
Ulcer of penis.....	2	31	14	17	1		120

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GULF—Continued.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.
DISEASES OF THE GENERATIVE SYSTEM—Continued.								
Gangrene of penis.....								
Soft chancre.....	3	41	26	10	1		7	1
Pruritus of the scrotum.....								1
Inflammation of the spermatic cord.....		2	1	1				2
Hydrocele of the spermatic cord.....								2
Varicocele.....		1	1					6
Hydrocele of tunica vaginalis.....		1	1					4
Inflammation of the testicle—								
Acute orchitis.....	1	8	8	1				22
Chronic orchitis.....		1	1					2
Epididymitis.....		6	6					8
Spermatorrhea.....								5
Impotence.....								3
DISEASES OF THE ORGANS OF LOCOMOTION.								
Inflammation of the bones, periostitis.....	3	15	11	5	1		1	183
Caries.....		1		1				1
Necrosis.....		2	2					2
Ununited fracture, or false joint.....		4	3	1				6
Inflammation of joints—								
Acute synovitis.....		1			1			1
Suppuration.....	1	2	3					21
Ankylosis.....								1
Dislocation of joint.....								2
Caries of the spine.....				1				1
Posterior curvature of spine.....	1	1					1	1
Inflammation of muscles.....								1
Myalgia.....	1	2	2	1				147
Hypertrophy muscles of leg.....		1		1				1
Inflammation of sheaths of tendons.....								2
Thecal abscess.....		1	1					4
Inflammation of bursa, acute.....								1
DISEASES OF THE CONNECTIVE TISSUE.								
Inflammation.....	2	40	18	20	2		2	88
Abscess.....		5	1	2			2	19
Oedema.....	2	34	17	17	2			65
		1		1				4
DISEASES OF THE SKIN.								
Erythema.....	3	41	25	15	2		2	287
Urticaria.....								1
Prickly heat.....								6
Eczema.....		6	2	3	1			4
Impetigo.....		1		1				83
Pityriasis rubra.....								1
Psoriasis.....		2	1	1				1
Herpes.....								6
Zona.....								2
Pemphigus.....		1		1				3
Acne.....								4
Sycosis.....		1		1				1
Seborrhea.....								1
Chloasma.....								1
Alopecia.....								1
Ulcer.....	2	21	15	7			1	72
Boil.....		1			1			58
Carbuncle.....		3	1	1			1	5
Whitlow.....		2	2					21
Onychia.....		1	1					4
Corn.....								4
Wen.....								2
Pruritus.....								2
Lupus.....								3
Rhinoscleroma.....	1	1	2					1
Injuries.....	1	16	12	2		1	2	9

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GULF—Continued.

Diseases.	Number of cases.							
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.	Total treated in hospital and dis- pensary
GENERAL INJURIES:								
Effects of heat—								
Burns and scalds.....		4	4					1
Heat stroke.....		7	6	1				4
Sunstroke.....		4	1	1		1	1	2
Effects of cold.....								1
Multiple injury.....	1	1	1				1	1
LOCAL INJURIES.....	7	184	133	38	2	5	13	614
Contusion of liver.....								1
Contusion of muscles.....		1	1					1
Strain of muscles.....								23
Strain of tendons.....								2
Abrasion of skin.....	1	1	1	1				14
Burn or scald of skin.....		10	8	1		1		24
Frostbite.....		1		1			1	47
Abrasion of mucous membrane.....								2
Burn or scald of mucous membrane.....								1
Contusion of scalp.....		1		1				1
Wound of scalp.....		2	1	1		1		14
Contusion of skull.....		1	1					1
Fracture of the vault of skull.....		1				1		4
Contusion of face.....		1	1					2
Wound of face and mouth.....		7	7					15
Fracture of facial bones.....		4	2	2				22
Dislocation of lower jaw.....		1	1					1
Contusion of eyelid.....		1		1				1
Wound of eyelid.....								1
Subconjunctival hemorrhage.....		1		1				1
Contusion of eyeball.....								3
Foreign bodies in the conjunctiva or cornea.....								7
Foreign bodies in the eyeball.....								1
Wound of eyeball.....		1	1					3
Wound of pinna.....								2
Foreign body in external meatus.....								1
Contusion of neck.....								4
Wound of neck.....		1				1		2
Contusion of chest.....		5	5					27
Fracture of ribs.....		8	7	1				5
Wound of parietes of chest.....		1	1					1
Penetrating wound of pleura or lung.....		1		1				3
Gunshot wound.....		7	5			1	1	2
Contusion of back.....	2	5	6	1				15
Sprain of back.....		1				1		27
Wound of back.....		2	2					1
Contusion of cord.....		1	1					1
Contusion of abdomen.....		3	2	1				4
Wound of parietes of abdomen.....			1				1	1
Contusion of the pelvis.....		1		1				1
Contusion of the perinæum, scrotum, or penis.....								1
Wound of the male urethra, peri- næum, scrotum, testis, or penis.....		2	1				1	2
Laceration of bladder.....								1
Contusion of testicle.....		1	1					2
Contusion of upper extremities.....		10	7	2			1	19
Sprain of shoulder.....								21
Sprain of elbow.....								2
Sprain of wrist.....		4	4					6
Sprain of thumb.....								2
Sprain of fingers.....								1
Wound of upper extremities.....		18	12	5	1			180
Fracture of clavicle.....		3	3					1
Fracture of scapula.....		2	1	1				2
Fracture of bones of forearm—								
Radius.....		3	2	1				2
Ulna.....		1		1				1
Both bones.....		3	2	1				3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GULF—Continued.

Diseases.	Number of cases.							Total treated in hospital and dispensary.	
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.		Treated at dispensary.
LOCAL INJURIES—Continued									
Fracture of carpus, metacarpus, or phalanges	1	2	3					4	7
Dislocation of clavicle		2	2					1	1
Dislocation of phalanges of fingers								1	1
Contusion of lower extremities		17	12	2			3	2	45
Sprain of hip								3	3
Sprain of knee		2	2					11	13
Sprain of ankle		5	1	4				14	19
Sprain of foot								2	2
Wound of lower extremities	2	23	16	7		2		46	71
Wound of joint, lower extremities		1	1					1	1
Fracture of femur	1	2	2			1			3
Fracture of tibia		3	2			1			3
Fracture of fibula		2	1			1			2
Fracture of tibia and fibula		4		2				1	5
"Observation"		2	2						2

DISTRICT OF THE OHIO.

TOTAL CASES	58	1,004	611	338	22	40	51	3,379	4,441
General Diseases	29	396	231	146	11	17	20	1,290	1,705
Smallpox		7	5		2			2	9
Cowpox								54	7
Measles		7	7						7
Influenza		48	39	7	2			80	88
Mumps		2	2					1	3
Diphtheria		3	3						3
Cerebro-spinal fever								1	1
Enteric fever	2	23	16	1		6	2	1	26
Dysentery	2	23	18	5		1	1	15	40
Malarial fever—									
Intermittent	2	43	36	7	1		1	137	182
Remittent	1	22	21	2				25	48
Erysipelas	2	5	5	2				1	8
Pyæmia		1				1			1
Tubercle	5	40	2	27	2	7	7	45	90
Syphilis—									
Primary	1	20	9	11			1	15	36
Secondary	8	47	1	48	2	1	3	279	334
Tertiary								13	13
Gonorrhea	1	19	10	9	1			304	324
Diseases dependent on animal parasites									
Taenia mediocanellata		1	1						1
Pediculus vestimentalis								1	1
Phthirus inguinalis								6	6
Rhinoscleroma								2	2
Sarcoptes scabiei		2		2				12	14
Diseases dependent on vegetable parasites									
Microsporon furfur								2	2
Effects of animal poisons, decayed and poisonous food		1	1					1	2
Effects of vegetable poisons—									
Poison oak								1	1
Patent medicine								1	1
Alcoholism	1	11	11			1		13	35
Rheumatic fever	4	19	16	5			2	9	32
Rheumatism		40	23	13	1		3	214	254
Cyst—									
Chalazion		1	1					1	2
Tubo-ovarian								1	1
New growth, nonmalignant—									
Lipoma		2	2					3	5
Fibroma								1	1
Chondroma		1	1					1	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE OHIO—Continued.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Total treated in hospital and dispensary.
New growth, nonmalignant—Continued.								
Myoma.....							1	1
Papilloma.....							5	5
Condyloma.....							2	2
New growth, malignant—								
Sarcoma.....							2	2
Carcinoma.....							4	4
Squamous carcinoma.....		1	1					1
Anemia.....		2		2			1	3
Debility.....		5		5			23	28
Local Diseases.....								
DISEASES OF THE NERVOUS SYSTEM.....	6	6	3	4	1		4	61
Of the nerves—								
Inflammation—								
Neuritis.....		1			1		8	9
Multiple neuritis.....	1		1					1
Of the spinal cord and membranes, cord—Degeneration of posterior columns.....	2						2	3
Functional nervous disorders with other diseases of undetermined nature—								
Paralysis—								
Hemiplegia.....	3	2		3			2	5
Monoplegia.....							1	1
Spasm.....							1	1
Epilepsy.....							3	3
Headache.....							5	5
Neuralgia.....		2	1	1			24	26
Nervous weakness.....		1	1				18	19
DISEASES OF THE EYE.....	2	11	6	6	1		57	70
Conjunctivitis—								
Catarrhal—								
Acute.....		3	1	2			46	49
Chronic.....							5	5
Keratitis.....		1		1				1
Ulceration of cornea.....		2	2					2
Iritis.....	1	2	3				1	4
Glaucoma.....		1			1		2	3
Lenticular cataract.....	1	1		2				2
Panophthalmitis.....							1	1
Ametropia.....							1	1
Dacryo-cystitis.....		1		1			1	2
DISEASES OF THE EAR.....		2	1	1			8	10
Inflammation of the external meatus—								
Acute.....							2	2
Abscess.....							2	2
Inflammation of the middle ear—								
Nonsuppurative.....		1		1				1
Suppurative.....		1	1				4	5
DISEASES OF THE NOSE.....							26	26
Inflammation of soft parts.....							20	20
Epistaxis.....							4	4
Inflammation of the naso-pharynx.....							2	2
DISEASES OF THE CIRCULATORY SYSTEM.....	1	21		18		2	2	60
Valvular disease—								
Aortic.....		3		1		2	6	9
Mitral.....	1	8		8			20	29
Aortic and mitral.....							1	1
Tricuspid.....		1		1				1
Myocarditis.....							2	2
Degeneration of heart, fatty.....		1		1			4	5
Hypertrophy of heart.....		2		2			4	6
Dilatation of heart.....		3		3			10	13

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE OHIO—Continued.

Diseases.	Number of cases.								
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.	Total treated in hospital and dispensary.
DISEASES OF THE CIRCULATORY SYSTEM—Continued.									
Disordered action of the heart, irregularity								1	1
Degeneration of arteries, arterio-capillary fibrosis								2	2
Aneurism of arteries		1		1				4	5
Obstruction of arteries, embolism		1		1					1
Phlebitis		1					1		1
Varix								4	4
Thrombosis								1	1
Phlegmasia dolens								1	1
DISEASES OF THE RESPIRATORY SYSTEM	1	69	42	13	1	12	2	391	461
Hay fever								2	2
Inflammation of mucous membrane of larynx—									
Catarrhal, acute		1					1	12	13
Tracheitis								2	2
Bronchitis—									
Catarrhal, acute		25	22	3				301	326
Catarrhal, subacute								8	8
Catarrhal, chronic		4	1	3				41	45
Ulceration of bronchi		1				1			1
Spasmodic asthma		3	2			1		6	9
Pneumonia		20	11			8	1		20
Phthisis—									
Acute		1				1			1
Tubercular								2	2
Pleurisy—									
Acute	1	11	6	5		1		12	24
Subacute								2	2
Chronic								2	2
Hydrothorax		1			1			1	2
Emphysema		2		2					2
DISEASES OF THE DIGESTIVE SYSTEM	4	111	79	24	4	4	4	548	663
Fissure of the lips								1	1
Inflammation of the mouth								2	2
Ulceration of the mouth								2	2
Caries of dentine and cementum								7	7
Inflammation of dental periosteum								2	2
Abscess of dental periosteum								1	1
Caries of the alveoli								1	1
Toothache								1	1
Sore throat								5	5
Ulceration of tonsils								1	1
Inflammation of tonsils—									
Follicular		9	8				1	35	44
Suppuration		2	2					3	5
Hypertrophy of tonsils								2	2
Salivation								2	2
Inflammation of the pharynx—									
Catarrhal	1	1	2					4	6
Granular								2	2
Follicular								1	1
Ulceration of pharynx								1	1
Inflammation of the stomach, catarrhal		8	8					25	33
Ulceration of the stomach, superficial		1		1				2	3
Dilatation of the stomach								1	1
Indigestion	1	11	8	2	1	1		135	147
Pyrosis								4	4
Gastralgia		2	1	1				1	3
Loss of appetite								1	1
Inflammation of the intestines—									
Enteritis	1	2	2		1			15	18
Typhitis	1	7	4	3		1			7
Catarrhal		25	20	1	2	1	1	24	49

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE OHIO—Continued.

Diseases.	Number of cases.								
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.	Treated at dispen- sary.	Total treated in hospital and dis- pensary.
DISEASES OF THE DIGESTIVE SYSTEM—Continued.									
Tympanites.....		1		1				1	2
Hernia.....		3	2				1	45	48
Intestinal dyspepsia.....								7	7
Constipation.....								84	84
Colic.....		1	1					1	2
Diarrhea.....		16	11	4			1	77	93
Periproctitis, abscess.....		3	1	2				1	4
Fissure of the anus.....		1		1					1
Fistula in ano.....		4	2	2				6	10
Piles—									
Internal.....		1	1					2	3
External.....		3	2	1				14	17
Mixed.....								1	1
Pruritus ani.....								1	1
Inflammation of the liver—									
Acute.....		2	1	1				35	37
Acute abscess.....								1	1
Chronic.....		3		2		1		5	8
Hyperemia of the liver.....								6	6
Hypertrophy of the liver.....								1	1
Jaundice.....		2	2					1	3
Inflammation of hepatic ducts and gall bladder.....		1		1				2	3
Calculi.....		2	1	1					2
Biliary colic.....								1	1
DISEASES OF THE LYMPHATIC SYSTEM.....	1	34	22	11		1		32	67
Inflammation of lymph glands.....	1	27	18	8		1		25	53
Suppuration.....		7	4	3				3	10
Inflammation of lymphatics.....								4	4
DISEASES OF THE THYROID BODY.....		1					1	1	2
Goitre.....								1	1
DISEASES OF THE URINARY SYSTEM.....	1	12	3	6		1	3	24	37
Acute nephritis.....		2	1				1		2
Bright's disease.....		1					1	3	4
Chronic nephritis.....	1	4	1	2		1	1	1	6
Granular kidney.....		1		1				2	3
Calculus in kidney.....		1		1					1
Lithuria.....		1		1				4	5
Inflammation of bladder—									
Acute.....								5	5
Subacute.....		1		1				4	5
Chronic.....								2	2
Irritability of bladder.....								1	1
Retention of urine.....		1	1						1
Incontinence of urine.....								2	2
DISEASES OF THE GENERATIVE SYSTEM.....	2	80	46	33	1		2	228	310
Urethritis.....								2	2
Gleet.....								1	1
Abscess of the urethra.....		1					1		1
Hemorrhage of the urethra.....		2	1		1				2
Stricture of urethra—									
Organic.....		12	5	7				29	41
Spasmodic.....		1	1						1
Urethral fistula.....		1	1						1
Inflammation of the prostate—									
Acute.....		1	1						1
Chronic.....								2	2
Phimosis.....		3	2	1					3
Paraphimosis.....		1	1						1
Inflammation of the glands of the penis.....		6	4	2				10	16
Ulcer of penis.....	1	24	7	17			1	86	111
Soft chancre.....	1	16	15	2				52	66
Hydrocele of the spermatic cord.....								2	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE OHIO—Continued.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.
DISEASES OF THE GENERATIVE SYSTEM—Continued.								
Varicocele		1	1					11
Hydrocele of tunica vaginalis		1		1				3
Inflammation of the testicle—								
Acute orchitis		5	4	1				14
Chronic orchitis		1		1				
Epididymitis		2	2					
Spermatorrhea								2
Impotence								6
Inflammation of the ovary								1
Inflammation of the fallopian tube		1	1					
Inflammation of peritoneum		1		1				
Dysmenorrhea								2
Menorrhagia								1
Leucorrhea								4
DISEASES OF THE ORGANS OF LOCOMOTION.	3	26	18	7	1	1	2	166
Inflammation of the bones—								
Osteitis								1
Periostitis		2		2				
Caries								1
Necrosis		2		1				
Inflammation of joints—								
Acute synovitis		1	1					2
Chronic synovitis								2
Hydrops articuli		1		1				
Psoas, lumbar, and other abscesses	1					1		
Suppuration of muscles		1	1					
Myalgia	1	18	15	2	1		1	151
Lumbago	1			1				
Contraction of tendons		1	1					1
Inflammation of sheaths of tendons								3
Bunion								1
Flat foot								4
DISEASES OF THE CONNECTIVE TISSUE		15	11	3	1			37
Inflammation		1	1					4
Abscess		14	10	3	1			32
Edema								1
DISEASES OF THE SKIN	3	33	23	10			3	188
Erythema								2
Urticaria								2
Prickly heat								2
Eczema	1	4	2	2			1	54
Herpes								5
Zona								2
Acne								6
Sycosis								2
Sudamina								1
Ulcer	2	24	18	7			1	78
Boll		2	2					12
Carbuncle								5
Whitlow		1	1					4
Onychia		2		1			1	4
Corn								2
Hyperidrosis								1
Bromidrosis								1
Injuries								
GENERAL INJURIES		9	5	3		1		5
Effects of heat, burns and scalds		5	5					3
Effects of cold								1
Multiple injury		1				1		1
Exhaustion								1
Shock		3		3				3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE OHIO—Continued.

Diseases.	Number of cases.							
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.	Treated at dispen- sary.
LOCAL INJURIES	5	178	121	53		1	8	367
Strain of muscles.....								1
Abrasion of skin.....								3
Wound of skin.....								1
Burn or scald of skin.....	5	4	1					29
Frostbite.....	2	2						2
Effects on the skin of irritants or cor- rosives.....								1
Contusion of scalp.....								3
Wound of scalp.....	7	5	2					12
Concussion of brain.....	1					1		
Contusion of face.....	1	1						5
Wound of face and mouth.....	4	3	1					7
Fracture of facial bones.....	4	2	2					
Dislocation of lower jaw.....	1		1					
Contusion of eyelid.....								2
Wound of eyelid.....								1
Contusion of eyeball.....	2	2						
Foreign bodies in the conjunctiva or cornea.....								5
Wound of eyeball.....	1		1					
Wound of pinna.....								1
Contusion of neck.....	1		1					
Wound of neck.....								4
Gunshot wound.....	1		1					2
Contusion of chest.....	9	8	1					15
Fracture of ribs.....	6	5	1					8
Wound of parietes of chest.....	3	2				1		4
Contusion of back.....	3	2	1					21
Sprain of back.....	5	3	2					8
Wound of back.....								1
Contusion of abdomen.....	1	1						1
Wound of parietes of abdomen.....								2
Contusion of the pelvis.....	2	2						2
Wound of the male urethra, peri- næum, scrotum, testis, or penis.....								1
Contusion of testicle.....								2
Contusion of upper extremities.....	12	8	4					35
Sprain of shoulder.....								5
Sprain of elbow.....								4
Sprain of wrist.....	1	1						14
Sprain of thumb.....								1
Wound of upper extremities.....	1	13	9	4			1	75
Fracture of clavicle.....	3	3						
Fracture of scapula.....								1
Fracture of humerus.....	2	1				1		
Fracture of bones of forearm— Radius.....	3	1	2					
Ulna.....	2	1	1					1
Both bones.....	2		2					
Fracture of carpus, metacarpus, or phalanges.....	1	1						
Dislocation of clavicle.....								6
Dislocation of humerus.....	2	2						1
Dislocation of radius and ulna.....	2	2						
Dislocation of phalanges of fingers.....	1	1						
Contusion of lower extremities.....	30	17	13					39
Sprain of knee.....	6	4	2					5
Sprain of ankle.....	1	14	8	5			2	14
Wound of lower extremities.....	13	7	5				1	20
Fracture of femur.....	2	2						
Fracture of patella.....	2	1	1					
Fracture of tibia.....	4	2	1				1	
Fracture of fibula.....	1	1						
Fracture of tibia and fibula.....	1	2	2				1	2
Fracture of bones of foot, dislocation of scapho-astagaloid joint.....	1	1	1					
Undetermined.....	1	1	1					
Malingering.....	1	1	1					

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE MISSISSIPPI.

Diseases.	Number of cases.							
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.	Total treated in hospital and dis- pensary.
TOTAL CASES	42	1,305	815	414	29	36	53	3,072
General Diseases	21	676	474	168	21	11	23	2,237
Smallpox.....		5	3		2			5
Cowpox.....							44	44
Measles.....		9	9				4	13
Influenza.....		35	29	5		1	66	101
Mumps.....		5	5				1	6
Simple continued fever.....		2	2				1	3
Enteric fever.....	1	19	14	1		4	2	22
Dysentery.....	1	10	8	3			23	34
Malarial fever—								
Intermittent.....	4	285	262	11	3	2	11	755
Remittent.....	2	35	36	1			15	52
Sloughing phagedæna.....		1	1					1
Erysipelas.....		4	4					4
Tubercle.....	3	29	1	17	8	4	2	72
Syphilis—								
Primary.....	1	7		8			27	35
Secondary.....	1	68	1	64	1		3	306
Gonorrhea.....		29	19	10			257	296
Diseases dependent on animal parasites—								
Acanthia lectularia.....							1	1
Ascaris lumbricoides.....							1	1
Phthirus inguinalis.....							6	6
Tænia saganata.....		1	1				1	2
Sarcoptes scabiei.....							6	6
Echinococcus hominus.....		1	1					1
Diseases dependent on vegetable para- sites, trichophyton tonsurans.....		1		1			1	2
Effects of animal poisons—								
Morbid secretions.....		1	1					1
Septic poisoning.....		1	1					1
Cantharides.....							1	1
Effects of vegetable poisons, rhus toxicodendron.....							1	1
Effects of inorganic poisons, mercury.....							1	1
Effects of mechanical injuries.....							1	1
Effects of heat.....		1	1					1
Effects of chemical agents.....		1					1	2
Alcoholism.....		27	21	4	1		10	37
Delirium tremens.....		2	2					2
Rheumatic fever.....		9	7	2				9
Rheumatism.....	6	77	43	35	1		4	335
Gout.....							1	1
New growth, nonmalignant—								
Fibroma.....							1	1
Papilloma.....							10	10
New growth, malignant—								
Carcinoma.....	1	3		2	2			4
Squamous carcinoma.....	1	1	1		1			2
Hodgkin's disease.....		1		1			3	4
Diabetes mellitus.....		1			1		2	3
Diabetes insipidus.....		1		1				1
Defecity.....		3	2				57	60
Old age.....		1			1			1
Local Diseases								
DISEASES OF THE NERVOUS SYSTEM	4	21	8	11		3	3	66
Of the nerves—								
Inflammation, neuritis.....		1	1					5
Degeneration of nerves.....		1		1			3	4
Of the spinal cord and membranes, cord—								
Inflammation, diffuse.....							1	1
Degeneration of posterior columns.....		2		1			1	3
Hæmorrhage.....	1	1		1			1	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE MISSISSIPPI—Continued.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Total treated in hospital and dispensary.
DISEASES OF THE NERVOUS SYSTEM—Continued.								
Functional nervous disorders with other diseases of undetermined nature—								
Apoplexy.....	1	1				1	1	2
Paralysis, hemiplegia.....	1	3		4			1	5
Incomplete paralysis.....	1	1		2			1	3
Torticollis.....							1	1
Epilepsy.....		2				2	1	3
Vertigo.....		3	3					3
Headache.....							5	5
Neuralgia.....		4	3	1			20	24
Hysteria.....		1		1				1
Nervous weakness.....				1			3	3
Mental diseases, mental stupor.....		1	1					1
DISEASES OF THE EYE.....	1	7	3	5			29	37
Conjunctivitis—								
Catarrhal—								
Acute.....		5	2	3			25	30
Chronic.....		1		1				1
Purulent.....		1		1				1
Iritis.....	1		1					1
Lenticular cataract.....							2	2
Oedema of eyelid.....							1	1
Ptosis.....							1	1
DISEASES OF THE EAR.....		5	1	4			12	17
Inflammation of the external meatus—								
Acute.....							6	6
Abcess.....							1	1
Accumulation in external meatus of wax or epidermis.....							1	1
Inflammation of the middle ear—								
Nonsuppurative.....		3	1	2			2	5
Suppurative.....		2		2			2	4
DISEASES OF THE NOSE.....	1	1	2				13	15
Inflammation of soft parts.....		1	1				13	14
Inflammation of the accessory sinuses.....	1							1
DISEASES OF THE CIRCULATORY SYSTEM.....	2	34	2	26		3	5	43
Pericarditis.....		3		3			1	4
Valvular disease—								
Aortic.....	1	1		2			3	5
Mitral.....		13		9		2	28	41
Aortic and mitral.....		2		2				2
Degeneration of heart, fatty.....	1					1		1
Dilatation of heart.....		1		1				1
Disordered action of the heart.....		1		1				1
Abnormal slowness.....							2	2
Abnormal rapidity.....							5	5
Irregularity.....		1		1				1
Aneurism of arteries.....		3		1			2	3
Obstruction of arteries, embolism.....		1		1				1
Phlebitis.....		3	2				1	4
Varix.....		5		5				5
DISEASES OF THE RESPIRATORY SYSTEM.....	91	54	25	1	9	2	223	314
Oedema of larynx.....	2			2				2
Inflammation of mucous membrane of larynx, catarrhal, acute.....		2	2				3	5
Aphonia.....		1			1		1	2
Bronchitis—								
Catarrhal, acute.....		28	19	9			201	229
Catarrhal, chronic.....		6	1	4		1	6	12
Spasmodic asthma.....		5		5			4	9
Pneumonia.....		34	24	1		8	1	35

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE MISSISSIPPI—Continued.

Diseases.	Number of cases.							
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.	Total treated in hospital and dis- pensary.
DISEASES OF THE RESPIRATORY SYSTEM—								
Continued.								
Phthisis—								
Acute.....		1		1				1
Chronic.....		1						1
Pleurisy—							1	
Acute.....		8	8					15
Chronic.....		3		3				3
DISEASES OF THE DIGESTIVE SYSTEM.....	1	106	71	26	4	3	3	456
Inflammation of the mouth.....							3	3
Caries of dentine and cementum.....							3	1
Necrosis of cementum.....		1		1				1
Abcess of dental periosteum.....							2	2
Inflammation of gums and alveoli.....							2	2
Toothache.....							1	1
Sore throat.....		3	2	1			19	23
Inflammation of tonsils—								
Follicular.....	1	4	4	1			34	39
Suppuration.....		2	1	1			3	5
Salivation.....							4	4
Inflammation of the pharynx, catarrhal.....		1			1		8	9
Inflammation of the stomach, catarrhal.....		10	9	1			24	34
Ulceration of the stomach—								
Superficial.....		1		1			2	3
Perforating.....		1	1					1
Hæmorrhage of the stomach.....		1						1
Indigestion.....		8	4	3			91	99
Gastralgia.....							1	1
Inflammation of the intestines—								
Enteritis.....		7	7				5	12
Typhlitis.....		5	2	2		1		5
Colitis.....		3	2	1			2	5
Catarrhal.....		2	2				3	5
Hernia.....		4	3			1	46	50
Intestinal dyspepsia.....							1	1
Constipation.....		4	4				88	92
Diarrhoea.....		25	18	4	1	1	74	99
Inflammation of the rectum.....		1	1					1
Periproctitis, abscess.....		2	1	1			1	3
Fistula in ano.....		3	3				1	4
Prolapse of the rectum.....		1			1			1
Piles—								
Internal.....		4	2	2			2	6
External.....		4	2	2			20	24
Mixed.....							1	1
Inflammation of the liver—								
Acute.....		1		1			4	5
Abscess.....		1		1				1
Chronic.....		5		5			2	7
Hyperæmia of the liver.....							6	6
Hypertrophy of the liver.....							1	1
Calculi.....		1	1				1	2
Inflammation of the peritoneum.....		1				1		1
Dilatation of gall bladder.....							1	1
DISEASES OF THE LYMPHATIC SYSTEM.....	1	32	10	19			4	44
Splenitis.....							1	1
Inflammation of lymph glands.....	1	26	9	15			3	31
Suppuration.....		5	1	3			1	11
Dilatation of lymphatics of scrotum.....		1		1				1
DISEASES OF THE URINARY SYSTEM.....	1	19	2	14		4	30	59
Acute nephritis.....		6	1	4		1	4	10
Bright's disease.....							3	3
Chronic nephritis.....		8		6		2	4	12
Granular kidney.....		2		1		1	1	3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE MISSISSIPPI—Continued.

Diseases.	Number of cases.						
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.
DISEASES OF THE URINARY SYSTEM—Con.							
Congestion of kidney.....		1		1			1
Hæmaturia.....		2		2			2
Inflammation of bladder—							
Acute.....	1		1				17
Subacute.....							2
Chronic.....							4
Calculus of bladder.....							1
Irritability of bladder.....							2
Incontinence of urine.....							1
DISEASES OF THE GENERATIVE SYSTEM	1	89	43	45			2
Urethritis.....		1	1				7
Hæmorrhage of the urethra.....		1	1				1
Stricture of urethra—							
Organic.....		13	6	7			18
Traumatic.....		1	1				1
Spasmodic.....							1
Urethral fistula.....		1		1			1
Hypertrophy of the prostate.....							4
Inflammation vesiculæ seminales.....		1	1				1
Phimosis.....		5	3	2			5
Paraphimosis.....							1
Inflammation of the glands of the penis.....							3
Concretions of prepuce.....							1
Ulcer of penis.....		6	5	1			6
Soft chancre.....	1	42	14	24			66
Inflammation of the spermatic cord.....		1	1				1
Hydrocele of the spermatic cord.....							2
Varicocele.....							5
Hydrocele of tunica vaginalis.....		1	1				1
Inflammation of the testicle—							
Acute orchitis.....		12	8	3		1	12
Chronic orchitis.....							1
Epididymitis.....		3	1	2			3
Abscess of testicle.....		1		1			1
Impotence.....							1
Inflammation of the Fallopian tube.....							1
Amenorrhœa.....							1
DISEASES OF THE ORGANS OF LOCOMOTION	1	15	11	4			1
Inflammation of the bones—							
Osteitis.....		1	1				4
Periostitis.....							2
Necrosis.....		3	2	1			2
Inflammation of joints—							
Acute synovitis.....							1
Chronic synovitis.....	1	1	1	1			2
Psoas, lumbar, and other abscesses.....		1		1			1
Myalgia.....		1		1			63
Lumbago.....		8	7	1			8
Bunion.....							1
DISEASES OF THE CONNECTIVE TISSUE		10	9	1			33
Inflammation.....		5	5				17
Abscess.....		5	4	1			16
DISEASES OF THE SKIN	3	33	14	20			2
Erythema.....							2
Urticaria.....		2	1	1			12
Eczema.....		3	2	1			18
Impetigo.....		1		1			1
Pityriasis rubra.....							1
Lichen.....		1		1			1
Psoriasis.....							2
Herpes.....		1	1				6
Zona.....		1	1				7
Acne.....							1
Sclerodermia.....							2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE MISSISSIPPI—Continued.

Diseases.	Number of cases.							Total treated in hospital and dispensary.
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	
DISEASES OF THE SKIN—Continued.								
Ulcer.....	2	15	4	11			2	29
Boll.....		4	3	1				31
Carbuncle.....		3	1	2				5
Whitlow.....		1	1					5
Onychia.....								2
Corn.....								2
Wen.....		1	1					1
Pruritus.....								1
Bromidrosis.....								2
Mycosis fungoides.....	1			1				1
Injuries.....		6	5	1				8
GENERAL INJURIES:								
Effects of heat—								
Burns and scalds.....		1	1					1
Heat stroke.....		2	2					1
Sunstroke.....		1	1					1
Multiple injury.....		1		1				3
Exhaustion.....								2
Shock.....		1	1					1
LOCAL INJURIES.....								
Wound of internal viscera.....	5	160	106	45	3	3	8	295
Contusion of muscles.....		1				1		2
Strain of muscles.....		1	1					27
Rupture of muscles.....		1		1				1
Wound of skin.....		1	1					1
Burn or scald of skin.....	1	4	4	1				14
Frostbite.....		7	4	3				9
Contusion of scalp.....								2
Wound of scalp.....		5	5					21
With injury to the aponeurosis.....		2	2					2
Contusion of skull.....		1		1				1
Fracture of the vault of skull.....		1		1				1
Wound of skull.....		1			1			1
Concussion of brain.....		2	1			1		3
Contusion of face.....		1	1					4
Wound of face and mouth.....		2	1	1				7
Fracture of facial bones.....		2	1	2				2
Injury to teeth.....								1
Contusion of eyelid.....								1
Wound of eyelid.....		1	1					1
Contusion of eyeball.....		3	1	2				4
Foreign bodies in the conjunctiva or cornea.....								4
Contusion of lung.....	1		1					1
Gunshot wound.....		4	1	2		1		5
Contusion of neck.....								3
Wound of neck.....		1	1					1
Foreign body in the air passages.....								1
Contusion of chest.....		3	2				1	5
Fracture of ribs.....		5	4		1			10
Wound of parietes of chest.....		1		1				1
Penetrating wound of pleura or lung.....		2	1		1			2
Contusion of back.....		2	1				1	4
Sprain of back.....		4	3	1				6
Wound of back.....		2	1	1				3
Contusion of cord.....		1	1					1
Contusion of abdomen.....								1
Wound of parietes of abdomen.....	1	1	2					3
Contusion of testicle.....								1
Contusion of upper extremities.....		3	2	1				22
Sprain of shoulder.....								1
Sprain of elbow.....								1
Sprain of wrist.....		1	1					6
Sprain of hand.....								1
Sprain of thumb.....								1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE MISSISSIPPI—Continued.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Total treated in hospital and dispensary.
LOCAL INJURIES—Continued.								
Wound of upper extremities.....		22	11	11				80
Fracture of clavicle.....		2	1	1				1
Fracture of bones of forearm—								
Radius.....		2		1			1	3
Ulna.....		1		1				1
Both bones.....		1		1				1
Fracture of carpus, metacarpus, or phalanges.....		2	1	1				3
Dislocation of humerus.....		1	1					1
Contusion of lower extremities.....		20	13	5			2	35
Sprain of knee.....		2	2					6
Sprain of ankle.....	1	10	8	3				9
Sprain of foot.....								2
Wound of lower extremities.....	1	22	19	3			1	34
Fracture of tibia.....		3	3					3
Fracture of fibula.....		2	2					2
Fracture of tibia and fibula.....		2					2	2
Fracture of bones of foot, of the metatarsus.....		1	1					1
Dislocation of tibia.....								1
Malingerer.....		1	1					1

DISTRICT OF THE WEST INDIES.

TOTAL CASES.....	6	59	39	19	2	5	66	131
General Diseases.....	1	24	18	4	1	2	18	48
Enteric fever.....		1			1			1
Dysentery.....		1	1				1	2
Malarial fever, intermittent.....		7	7				1	8
Syphilis:								
Primary.....							3	3
Secondary.....		1		1			4	5
Gonorrhea.....	1	4	3	2			3	8
Diseases dependent on animal parasites:								
Strongylus duodenalis.....		4	4					4
Uncinaria Americana.....		2				2		2
Scurvy.....								1
Alcoholism.....		1	1					
Rheumatic fever.....							2	2
Rheumatism.....		2	2				3	5
Cyst, serous.....							1	1
New growth, nonmalignant, lipoma.....		1		1				1
Local Diseases.....								
DISEASES OF THE NERVOUS SYSTEM.....							2	2
Neuralgia.....							1	1
Nervous weakness.....							1	1
DISEASES OF THE EYE.....							1	1
Iritis.....							1	1
DISEASES OF THE CIRCULATORY SYSTEM.....		2		1		1	1	3
Valvular disease, mitral.....		1				1		1
Disordered action of the heart, irregularity.....							1	1
Varix.....		1		1				1
DISEASES OF THE RESPIRATORY SYSTEM.....							3	3
Inflammation of mucous membrane of larynx, catarrhal, acute.....							3	3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE WEST INDIES—Continued.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.
DISEASES OF THE DIGESTIVE SYSTEM.		6	6					15
Inflammation of the stomach, catarrhal								3
Indigestion		2	2					6
Heartburn								1
Hernia		1	1					1
Colic		1	1					1
Diarrhea		2	2					3
DISEASES OF THE LYMPHATIC SYSTEM.		4	2	1			1	1
Inflammation of lymph glands		2	1	1				2
Suppuration		2	1				1	2
DISEASES OF THE URINARY SYSTEM.		1	1					1
Retention of urine		1	1					1
DISEASES OF THE GENERATIVE SYSTEM.	4	8	3	9			8	20
Soft chancre	4	8	3	9			7	19
Inflammation of the testicle, acute orchitis								1
DISEASES OF THE ORGANS OF LOCOMOTION.								1
Inflammation of joints, acute synovitis								1
DISEASES OF THE CONNECTIVE TISSUE.		2	2					2
Inflammation		1	1					1
Abscess		1	1					1
DISEASES OF THE SKIN.		1	1					1
Boll		1	1					1
Whitlow								1
Injuries		2		1			1	2
GENERAL INJURIES:								
Effects of heat, burns, and scalds		1					1	2
Multiple injury		1		1				1
LOCAL INJURIES.	1	9	6	3			1	13
Strain of muscles		1		1				1
Burn or scald of skin								1
Wound of pinna								1
Foreign body in the food passages								1
Fracture of ribs		1					1	1
Contusion of back		1	1					1
Contusion of upper extremities								3
Wound of upper extremities		2	2					2
Contusion of lower extremities		1	1					2
Wound of lower extremities		2		2				2
Wound of joint, lower extremities		1	1					1
Fracture of tibia and fibula	1		1					1

DISTRICT OF THE GREAT LAKES.

TOTAL CASES.	138	2,640	1,782	768	54	78	116	10,517	16,079
General Diseases	54	1,997	655	310	18	83	35	4,053	5,164
Smallpox			2						2
Cowpox								335	335
Measles		12	10	1			1	1	13
Scarlet fever		1							1
Influenza		96	88	6	1	1		204	300
Mumps		10	9	1				7	17
Diphtheria	1	7	7				1	5	13
Simple continued fever		3	3					6	9
Enteric fever	20	174	151	19	4	11	9	21	215

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GREAT LAKES—Continued.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.
Choleraic diarrhea.....		10	9				1	19
Epidemic diarrhea.....		1	1					18
Dysentery.....		7	5	2				15
Malarial fever—								
Intermittent.....		22	18	7				117
Remittent.....		1	5	4	1		1	8
Phagedæna, sloughing phagedæna.....		1	10	1				2
Erysipelas.....		1	10	10	1			17
Pyæmia.....			1	1				1
Septicæmia.....			1	1				2
Tubercle.....		6	86	7	67	2	11	139
Syphilis—								
Primary.....		1	7	2	6			91
Secondary.....		2	83	7	69	3	2	891
Tertiary.....			2	1	1			49
Gonorrhea.....		2	93	58	31	2	4	1,299
Actinomycosis.....								1
Diseases dependent on animal parasites—								
Tænia solium.....			6	3	1	2		15
Tænia mediocanellata.....								3
Pediculus pubis.....								1
Pediculus vestimentl.....								1
Phthirus inguinalis.....								3
Acarix mystax.....								1
Sarcoptes scabiei.....			9	6	3			156
Tænia Saginata.....			3	2	1			3
Diseases dependent on vegetable parasites—								
Achorion Schönleini.....			2		2			2
Trichophyton tonsurans.....			5	3	2			44
Microsporon furfur.....								4
Effects of vegetable poisons—								
Ivy.....			2	1	1			2
Opium.....			1	1				1
Tobacco.....		1	4	3	2			14
Atropa.....			1	1				1
Rhus toxicodendron.....								2
Effects of inorganic poisons—								
Mercury.....								1
Potassium iodide.....								1
Effects of the presence of foreign bodies.....								3
Effects of mechanical injuries.....			2		2			2
Effects of heat.....			2	2				2
Effects of chemical agents.....								1
Alcoholism.....		4	111	101	8	5	1	87
Rheumatic fever.....		2	20	14	7			23
Rheumatism.....		7	162	108	54		7	595
Gout.....			1					2
Cyst—								
Sebaceous.....			4	4				8
Lingual.....								2
Chalazion.....								4
New growth, nonmalignant—								
Lipoma.....			2	1	1			1
Fibroma.....			2	2				2
Chondroma.....								2
Pterygium.....								1
Papilloma.....								31
Nasal polypus.....			1		1			2
New growth, malignant—								
Sarcoma.....			3	1	1	1		2
Epithelioma.....			1	1				1
Squamous carcinoma.....			1	1				5
Anæmia.....			1		1			11
Idiopathic anæmia.....			1			1		1
Purpura.....			1		1			1
Hæmophilia.....			1		1			1
Diabetes mellitus.....			5		3	1		3
Diabetes insipidus.....			1		1			3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GREAT LAKES—Continued.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.
Congenital malformations.....		2	1		1			2
Debility.....		5	5					61
Local Diseases.....								
DISEASES OF THE NERVOUS SYSTEM.....	9	59	25	24	7		12	295
Of the nerves, inflammation—								
Neuritis.....		5	4	1				8
Multiple neuritis.....		1	1					2
Degeneration of nerves.....	1			1				
Of the spinal cord and its membranes—								
Cord—								
Degeneration—								
Of anterior cornua.....		1		1				
Of lateral columns.....								1
Of posterior columns.....	4	8		3	3		6	9
Syringomyelia.....								1
Of the brain and its membranes—								
Brain—								
Hemorrhage.....	1	1	1				1	
Hyperæmia.....								2
Functional nervous disorders with other diseases of undetermined nature—								
Paralysis—								
Paraplegia.....								1
Hemiplegia.....	1	6		4	1		2	10
Local paralysis.....	1	2	1	1			1	4
Aphasia.....								1
Paralysis from acute disease.....								1
Spasm.....								1
Facial spasm.....								2
Eclampsia.....		1	1					1
Epilepsy.....	1	7	2	5			1	5
Tetany.....		1	1					
Vertigo.....								4
Headache.....		5	4	1				28
Neuralgia.....		13	9	4				145
Hiccough.....								1
Nervous weakness.....		4	1	2	1			60
Mental diseases—								
Mania.....		1			1			
Melancholia.....		3		1	1		1	
DISEASES OF THE EYE.....	1	10	5	6				134
Conjunctivitis, catarrhal—								
Acute.....		2	2					95
Chronic.....								2
Keratitis.....								3
Ulceration of cornea.....		2	1	1				5
Iritis.....	1	1		2				6
Choroiditis.....		1		1				1
Retinitis.....		2		2				
Lenticular cataract.....								3
Panophthalmitis.....		1	1					
Amblyopia.....								6
Temporary blindness.....								1
Ametropia.....								1
Diplopia.....								1
Abcess of lachrymal sac.....								1
Blepharitis marginalis.....		1	1					1
Sty.....								3
Abcess of eyelid.....								3
Trichiasis.....								1
Œdema of eyelid.....								1
Ptosis.....								1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GREAT LAKES—Continued.

Diseases.	Number of cases.									
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.	Treated at dispen- sary.	Total treated in hospital and dis- pensary.	
DISEASES OF THE EAR.										
Inflammation of the external meatus—		8	4	2	1	1		48	56	
Acute.....		3	2	1				7	10	
Chronic.....								2	2	
Abscess.....								1	1	
Accumulation in external meatus of wax or epidermis.....								18	18	
Inflammation of the middle ear—										
Nonsuppurative.....		1				1			1	
Suppurative.....		4	2	1	1			13	17	
Within the mastoid cells.....								1	1	
Perforation of membrana tympani.....								2	2	
Tinnitus.....								1	1	
Deafness.....								3	3	
DISEASES OF THE NOSE.										
Inflammation of soft parts.....	1	4	3	2				120	155	
Diseases of septum, deviations.....								60	60	
Epistaxis.....		1	1					2	2	
Inflammation of the accessory si- nuses.....	1	2	1	2				1	4	
Inflammation of the naso-pharynx.....		1	1					56	57	
DISEASES OF THE CIRCULATORY SYSTEM.										
Pericarditis.....	9	73	10	59	3	8	2	125	107	
Valvular disease—								1	2	
Aortic.....	2	11		9	1	3		5	18	
Mitral.....	5	37	2	35	1	3	1	45	7	
Aortic and mitral.....	1	5		5		1		3	9	
Inflammation of muscular tissue.....		3		3				1	4	
Degeneration of heart, fatty.....								1	1	
Hypertrophy of heart.....								1	1	
Dilatation of heart.....								1	1	
Angina pectoris.....		1		1				1	2	
Disordered action of the heart—										
Abnormal slowness.....								1	1	
Abnormal rapidity.....								1	1	
Irregularity.....								27	27	
Arteritis.....		1					1	1	2	
Degeneration of arteries.....		1		1				1	1	
Aneurysm of arteries.....	1	1						1	3	
Obstruction of arteries, thrombosis.....		1	1		1	1			1	
Phlebitis.....		3	2	1				6	9	
Varix.....		8	5	3				27	35	
Dilatation of capillaries.....								2	2	
DISEASES OF THE RESPIRATORY SYSTEM.										
Hay fever.....	7	191	119	58	5	10	6	1,092	1,290	
Spasm of larynx.....								2	2	
Inflammation of mucous membrane of larynx—								1	1	
Catarrhal, acute.....		4	4					25	29	
Catarrhal, chronic.....								2	2	
Tracheitis.....								27	27	
Bronchitis—										
Catarrhal, acute.....	1	44	37	7	1			669	714	
Catarrhal, chronic.....	1	27	12	14			2	252	280	
Membranous.....								1	1	
Spasmodic asthma.....	1	10	4	7				40	51	
Congestion of lung.....		2		2				20	22	
Hemorrhage of lung, hæmoptysis.....	1	1		2				1	3	
Pneumonia.....	2	47	25	13		10	1	2	51	
Broncho-pneumonia.....		6	6					2	8	
Phthisis—										
Acute.....		4	1	1	2				4	
Chronic.....		1		1				3	4	
Tubercular.....		3		1	2			2	5	
Emphysema.....		2		1			1	1	8	

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GREAT LAKES—Continued.

Diseases.	Number of cases.							Total treated in hospital and dispensary.	
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.		Treated at dispensary.
DISEASES OF THE RESPIRATORY SYSTEM—									
Continued.									
Pleurisy—									
Acute.....		30	26	4				31	61
Chronic.....		7	3	4				11	18
Empyema.....	1	3	1	1			2	1	5
DISEASES OF THE DIGESTIVE SYSTEM....									
Ulceration of the lips.....	11	385	303	67	7	9	10	1,783	2,179
Fissure of the lips.....								2	2
Inflammation of the mouth.....								1	1
Ulceration of the mouth.....								5	5
Inflammation of the dental pulp.....								3	3
Suppuration of the dental pulp.....								1	1
Caries of dentine and cementum.....								1	1
Necrosis of cementum.....		1		1				1	2
Abscess of dental periosteum.....		2	1	1				8	10
Inflammation of gums and alveoli.....								1	1
Suppuration of alveoli.....								3	3
Ulceration of gums and alveoli.....		2	1	1				2	4
Toothache.....								3	3
Hypertrophy of gums.....								1	1
Impaction of teeth.....								1	1
Inflammation of the tongue.....								9	9
Ulceration of the tongue.....								3	3
Sore throat.....		3	2	1				35	38
Inflammation of tonsils—									
Follicular.....		60	55	5				144	204
Suppuration.....		4	4					7	11
Ulceration of mouth.....								1	1
Hypertrophy of tonsils.....								2	2
Elongated uvula.....								1	1
Salivary fistula.....								1	1
Inflammation of the pharynx—									
Catarrhal.....								60	60
Follicular.....		2	2					6	8
Ulceration of pharynx.....		1		1				1	2
Inflammation of the stomach, catarrhal.....	1	44	31	12	1	1		150	196
Ulceration of the stomach—									
Superficial.....		3		3				9	12
Perforating.....		1		1					1
Displacement of stomach.....								1	1
Dilatation of the stomach.....		1		1				1	2
Contraction of tendons.....								1	1
Stricture of pylorus.....		1			1				1
Indigestion.....	2	27	21	4	1	1	2	402	431
Pyrosis.....								27	27
Vomiting.....								1	1
Gastralgia.....								11	11
Loss of appetite.....								26	26
Inflammation of the intestines—									
Enteritis.....		55	46	6			3	55	110
Typhlitis.....	1	13	9	1		3	1	6	20
Colitis.....		2	2						2
Catarrhal.....	1	4	4	1				12	17
Ulceration of the intestines.....		1		1				1	2
Hemorrhage of the intestines.....				1					1
Fecal accumulation.....		2	2						3
Hernia.....		27	24	2	1			104	131
Obstruction of the intestines.....		1			1				1
Intestinal dyspepsia.....		1		1				19	20
Constipation.....		5	4	1				275	280
Colic.....	2	5	5	2				13	20
Diarrhea.....		49	45	3			1	195	244
Periproctitis.....		3	1	1			1	7	10
Abscess.....	2	9	7	3			1	1	12
Fissure of the anus.....		1		1				3	4
Fistula in ano.....		10	6	4				4	14

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GREAT LAKES—Continued.

Diseases.	Number of cases.							
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.	Total treated in hospital and dis- pensary.
DISEASE OF THE DIGESTIVE SYSTEM—Con.								
Prolapse of the rectum.....		1				1		1
Rectocele.....		1		1				1
Piles—								
Internal.....		5	3	2				16
External.....		16	13	1	2			77
Mixed.....		1	1					13
Pruritus ani.....							11	9
Inflammation of the liver, acute.....		3	1	1		1	1	6
Inflammation of capsula of liver.....							1	1
Inflammation of liver, chronic.....	1	1			1		1	4
Hyperemia of the liver.....		2	1	1			54	56
Stricture of the intestines.....							1	1
Stricture of the rectum.....		1		1				1
Ulceration of the rectum.....		1	1					1
Atrophy of the liver.....		1		1				1
Jaundice.....		3	3					12
Inflammation of hepatic ducts and gall bladder.....		4	3			1	5	9
Calculi.....		3	2			1	1	4
Biliary colic.....							1	1
Inflammation of the peritonæum.....		1	1					1
Dropsy.....	1		1					1
Accumulation of bile.....							4	4
DISEASES OF THE LYMPHATIC SYSTEM.....	3	52	37	15	2		108	163
Hypertrophy of spleen.....		1		1				1
Inflammation of the lymph glands.....		28	22	4	1		73	101
Suppuration.....	3	18	11	9	1		28	49
Hypertrophy of lymph glands.....							1	1
Inflammation of lymphatics.....		5	4	1			1	9
Dilatation of lymphatics.....							2	2
DISEASES OF THE THYROID BODY.....							8	8
Inflammation.....							1	1
Goitre.....							7	7
DISEASES OF THE URINARY SYSTEM.....	6	46	19	22	2	6	3	179
Acute nephritis.....		2		1	1			8
Bright's disease.....		6		4		1	1	9
Chronic nephritis.....	2	11		8		4	1	19
Granular kidney.....	1	4		4		1		6
Abscess—								
Of kidney.....		1		1			1	2
Perinephritic.....	1	1	1		1			2
Pyelitis.....		1		1				1
Congestion of kidney.....							1	1
Movable kidney.....		1	1					1
Calculus in kidney.....		1	1					1
Calculus in ureter.....		2	2					2
Glycosuria.....							2	2
Hæmaturia.....	1	2	3					3
Hæmoglobinuria.....							1	1
Lithuria.....		1	1				7	8
Inflammation of bladder—								
Acute.....		6	4	2			40	46
Subacute.....		2	1	1			17	19
Chronic.....		2	2				25	27
Calculus of bladder.....	1		1					1
Irritability of bladder.....							4	4
Retention of urine.....		1	1					1
Incontinence of urine.....		2	1				9	11
DISEASES OF THE GENERATIVE SYSTEM.....	5	138	96	44		1	2	794
Urethritis.....							3	3
Gleet.....							3	3
Ulcer of the urethra.....							2	2
Stricture of urethra, organic.....		18	6	12			100	118

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GREAT LAKES—Continued.

Diseases.	Number of cases.						
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.
DISEASES OF THE GENERATIVE SYSTEM—Continued.							
Urethral fever.....		1	1				1
Inflammation of the prostate—							
Acute.....		1	1				2
Chronic.....							5
Hypertrophy of the prostate.....		3		2		1	6
Posthitis.....		1	1				1
Phimosis.....	1	14	11	4			25
Paraphimosis.....		7	7				
Inflammation of the glands of the penis.....		1	1				3
Ulcer of penis.....	2	9	7	3			102
Soft chancre.....	1	32	16	16			281
Soft chancre of scrotum.....		1	1				1
Pruritus of the scrotum.....							1
Hydrocele of the spermatic cord.....		2	1	1			6
Varicocele.....		10	9	1			27
Hydrocele of tunica vaginalis.....		7	5	2			18
Inflammation of the testicle.....	1	4	5				5
Acute orchitis.....		15	13	2			34
Chronic orchitis.....							1
Epididymitis.....		6	5	1			10
Spermatorrhoe.....							6
Impotence.....							2
Inflammation of the ovary.....		1	1				1
Inflammation of the fallopian tube.....		1	1				2
Inflammation of the uterus.....		2	2				1
Atrophy of testicle.....							1
Laceration of cervix uteri.....							4
Amenorrhoea.....		1	1				1
Menorrhagia.....							2
Metrorrhagia.....		1	1				1
Mastitis.....							1
Inflammation of breast, male.....							1
DISEASES OF THE ORGANS OF LOCOMOTION.							
Inflammation of the bones—	4	49	33	18	1		372
Osteitis.....		1					1
Periostitis.....		3	1	1	1		4
Chronic abscess.....		1					1
Caries.....		2	2				2
Necrosis.....	1	3	3	1			3
Hypertrophy of the bones.....							1
Inflammation of joints—							
Acute synovitis.....		7	5	2			9
Chronic synovitis.....		2		2			1
Ankylosis.....							1
Dislocation of articular cartilage.....		1		1			1
Loose body in joint.....							1
Caries of the spine.....	1	8	1				1
Myalgia.....							1
Lumbago.....	1	10	11	3			329
Inflammation of tendons.....							1
Contraction of tendons.....				1			2
Inflammation of sheaths of tendons.....		1		1			4
Thecal abscess.....	1	2	1	2			1
Inflammation of bursæ, acute.....		5	1	4			7
Abscess of bursæ.....							2
Bunion.....		1	1				3
Bursal cyst.....		1	1				1
Flat foot.....							1
Hammer toe.....		1	1				1
DISEASES OF THE CONNECTIVE TISSUE.							
Inflammation.....	52	43	6	1		2	90
Abscess.....	14	10	2	1		1	54
	38	33	4			1	45

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GREAT LAKES—Continued.

Diseases.	Number of cases.							
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.	Treated at dispen- sary.
DISEASES OF THE SKIN.	5	94	61	32	1	...	5	521
Erythema		1	1					5
Pityriasis rosea								2
Urticaria		1	1					25
Prickly heat								1
Eczema		8	5	2	1			72
Impetigo	1	1	1					6
Psoriasis		1		1				21
Herpes								24
Zona	1	4	4	1				8
Pemphigus								12
Dermatitis herpetiformis								6
Acne								26
Gutta serena								1
Sycosis		2		2				33
Area								4
Ulcer	1	51	28	20			4	127
Boll		9	8	1				110
Carbuncle		10	6	3			1	8
Whitlow	1	4	3	2				9
Onychia	1	2	3					5
Corn								1
Wen								5
Hyperidrosis								1
Pruritus								6
Lupus								2
Atrophy of skin								1
Injuries.		23	16	3		1	3	17
GENERAL INJURIES:								
Effects of heat—								
Burns and scalds		9	5	1		1	2	16
Heat stroke		11	10	1				1
Effects of chemical irritants and cor- rosives		1	1					1
Multiple injury		2		1			1	2
LOCAL INJURIES	18	459	333	100	6	4	34	975
Compression of nerve								1
Contusion of muscles								2
Strain of muscles								7
Strain of tendons								1
Contusion of skin								5
Abrasion of skin		2	2					26
Wound of skin		2	2					4
Burn or scald of skin	1	15	13	1		1	1	59
Frostbite		6	6					6
Wound of mucous membrane								1
Contusion of scalp		3	2				1	2
Wound of scalp		15	12	3				32
With injury to the aponeurosis		2	2					2
Contusion of skull		1	1					1
Fracture of the vault of skull		2		1		1		2
Fracture of the base of skull		3	1	1		1		3
Concussion of brain		6	4	1			1	1
Contusion of face		6	6					6
Wound of face and mouth		8	7	1				29
Fracture of facial bones	1	10	9	2				4
Injuries of alveoli and teeth								2
Burn or scald of mouth	1		1					1
Contusion of eyelid								4
Wound of eyelid								4
Wound of conjunctiva		2		1			1	2
Foreign bodies in the conjunctiva or cornea		1	1					1
Wound of eyeball		3	1	1	1			2
Contusion of pinna								2
Hematoma of pinna								2
Wound of pinna								3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE GREAT LAKES—Continued.

Diseases.	Number of cases.							Total treated in hospital and dispensary.
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.		Treated at dispensary.
LOCAL INJURIES—Continued.								
Contusion of neck.....	1			1			1	2
Wound of neck.....							1	1
Foreign body in the food passages.....							1	1
Contusion of chest.....		15	9	6			34	49
Dislocation of costal cartilages.....							1	1
Fracture of ribs.....		21	12	6	1		26	47
Wound of parietes of chest.....		1	1				2	3
Gunshot wound.....		1	1					1
Contusion of back.....		16	9	6			1	34
Sprain of back.....		7	3	1			3	28
Wound of back.....		1	1					1
Contusion of abdomen.....		2	2					2
Wound of parietes of abdomen.....		2	2				2	4
Wound of internal viscera-kidney.....		1	1					1
Contusion of the perinæum, scrotum, or penis.....		1	1				2	3
Wound of the male urethra, perinæum, scrotum, testis, or penis.....		1					1	7
Contusion of upper extremities.....		16	11	4			88	104
Sprain of shoulder.....		2	2				7	9
Sprain of elbow.....		1		1			5	6
Sprain of wrist.....		5	2	2			1	23
Sprain of hand.....		1	1					1
Sprain of thumb.....		2	1	1			1	3
Sprain of fingers.....							3	3
Wound of upper extremities.....	2	59	45	11		1	4	262
Wound of joint, upper extremities.....							1	1
Fracture of clavicle.....		4	2	2			3	7
Fracture of scapula.....		3	2	1				3
Fracture of humerus.....		2	1	1			2	4
Fracture of bones of forearm—								
Radius.....	1	5	6				3	9
Ulna.....		2	1		1			2
Both bones.....		7	4	1			2	9
Fracture of carpus, metacarpus, or phalanges.....		13	5	6			2	18
Dislocation of humerus.....		6	6				4	10
Dislocation of phalanges of thumb.....							3	3
Contusion of lower extremities.....	2	51	41	10	1		1	77
Sprain of hip.....							2	2
Sprain of knee.....	1	8	4	4	1		10	19
Sprain of ankle.....	2	41	37	5	1		52	96
Sprain of foot.....							3	3
Internal derangement of joints.....							2	2
Wound of lower extremities.....	3	40	27	12			4	71
Wound of joint, lower extremities.....							2	2
Fracture of femur.....	1	5	5	1			1	7
Fracture of patella.....		2	2				2	2
Fracture of tibia.....		3	3					3
Fracture of fibula.....	1	7	7				1	8
Fracture of tibia and fibula.....		12	3	4			5	12
Fracture of bones of foot—								
Of the tarsus.....		1		1				1
Of the metatarsus.....	1	4	5					5
Of the phalanges of the toes.....	1			1				1

DISTRICT OF THE PACIFIC.

TOTAL CASES.....	289	2,299	1,213	913	55	137	360	4,924	7,512
General Diseases.....	198	932	307	427	31	103	282	1,719	2,849
Smallpox.....		1			1			2	3
Chicken pox.....								2	2
Measles.....	2	4	5				1	3	9
Rubella.....								1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE PACIFIC—Continued.

Diseases.	Number of cases.								
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.	Treated at dispen- sary.	Total treated in hospital and dis- pensary.
Scarlet fever.....		1	1						1
Influenza.....		32	24	6		1	1	80	112
Mumps.....								3	3
Diphtheria.....		9	8				1		9
Simple continued fever.....		2	2						2
Enteric fever.....	6	46	32	2		9	9	7	59
Epidemic diarrhea.....								1	1
Dysentery.....	1	6	3	3		1		6	13
Beriberi.....		2		1		1			2
Malarial fever—									
Intermittent.....	2	40	35	3		1	3	64	106
Remittent.....		3	3					1	4
Erysipelas.....	1	12	10	2			1	5	18
Phlegmonous.....		3	3						3
Pyæmia.....		3		3				11	14
Tubercle.....	158	354	16	178	29	81	208	43	555
Leprosy.....		1				1			1
Syphilis—									
Primary.....		9		9				30	39
Secondary.....	14	88	3	86			13	370	472
Tertiary.....								4	4
Gonorrhea.....	7	130	46	78			13	683	820
Diseases dependent on animal parasites—									
Taenia solium.....		3	2	1				3	6
Taenia mediocanellata.....		2	2						2
Ascaris lumbricoides.....		1	1					1	2
Pediculus vestimentil.....								2	2
Phthirus inguinalis.....								1	1
Sarcoptes scabiei.....		2	1	1				29	31
Diseases dependent on vegetable para- sites—									
Trichophyton tonsurans.....		2		2				4	6
Microsporon furfur.....								1	1
Effects of vegetable poisons—									
Opium.....		3	1	2				1	4
Tobacco.....								4	4
Effects of the presence of foreign bodies.....								1	1
Effects of heat.....		2	1			1			2
Effects of cold.....		1		1				1	2
Effects of chemical agents.....								1	1
Scurvy.....		2	1	1					2
Alcoholism.....		17	12	4			1	32	49
Rheumatic fever.....	4	28	22	9			1	3	35
Rheumatism.....	1	92	58	27	1		7	287	380
Osteoarthritis.....	1						1		1
Cyst—									
Mucous.....								1	1
Sebaceous.....		2	2					12	14
Chalazion.....								3	3
Degenerative.....		1	1						1
New growth, nonmalignant—									
Lipoma.....		3	3					3	6
Fibroma.....		2	2					4	6
Osteoma.....		1	1						1
Papilloma.....								10	10
Adenoma.....		2	2						2
New growth, malignant—									
Sarcoma.....		1		1					1
Carcinoma.....		1				1			1
Squamous carcinoma.....		7	1	1		3	2	6	13
Anæmia.....	1	2	2	1				4	7
Purpura.....		1	1						1
Diabetes mellitus.....		7		4		3		4	11
Diabetes insipidus.....								1	1
Debility.....		1		1				6	7

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE PACIFIC—Continued.

Diseases.	Number of cases.								
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.	Total treated in hospital and dispensary.
Local Diseases.									
DISEASES OF THE NERVOUS SYSTEM.	16	53	18	28	2	4	17	78	147
Of the nerves—									
Inflammation—									
Neuritis.	1	8	5	4				8	17
Multiple neuritis.		1					1	1	2
Of the spinal cord and membranes—									
Cord—									
Inflammation, diffuse.		1					1		1
Degeneration—									
Of anterior cornua.	1						1		1
Of lateral columns.	1	2		2			1	1	4
Of posterior columns.	1	2		2			1	1	4
Insular.	1					1			1
Of the brain and its membranes—Membranes—									
Hemorrhage.		4		3			1		4
Of the brain and its membranes—Brain—									
Hemorrhage.	1	3		3			1		4
Functional nervous disorders with other diseases of undetermined nature—									
Paralysis, hemiplegia.	4	4		5	1		2	9	17
Epilepsy.	2	5	1	6				3	10
Vertigo.								1	1
Headache.		1	1					3	4
Neuralgia.		6	4	1			1	28	44
Hiccough.		4	4					3	7
Nervous weakness.		1		1				10	11
Mental diseases—									
Mania.	1	3	2				2		4
Melancholia.	1	1		1		1			2
Mental stupor.		1				1			1
General paralysis of the insane.		2				1	1		2
Delusional insanity.	2	4	1		1		4		6
DISEASES OF THE EYE.	3	16	5	9		1	4	42	61
Conjunctivitis—									
Catarrhal.	1	1		2					2
Acute.		5	4	1				22	27
Chronic.		1		1					1
Purulent.		2	1						2
Ulceration of cornea.		3		2			1	3	6
Iritis.								4	4
Congestion of optic disk.								2	2
Choroiditis.		1					1		1
Glaucoma.		1		1					1
Detachment of retina.								1	1
Lenticular cataract.	2					1	1		2
Panophthalmitis.		2		2					2
Blepharitis marginalis.								4	4
Sty.								2	2
Trichiasis.								2	2
Ectropion.								1	1
Oedema.								1	1
DISEASES OF THE EAR.		10	5	3		1	1	58	68
Inflammation of the external meatus—									
Acute.								4	4
Abscess.								3	3
Accumulation in external meatus of wax or epidermis.								21	21
Inflammation of the middle ear—									
Non-suppurative.								9	9
Suppurative.		10	5	3		1	1	13	23
Ulceration of membrana tympani.								1	1
Perforation of membrana tympani.								5	5
Deafness.								3	3

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE PACIFIC—Continued.

Diseases.	Number of cases.								Total treated in hospital and dispensary.
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.	
DISEASES OF THE NOSE.									
Inflammation of soft parts.		5	4	1				65	70
Epistaxis.		2	2					60	62
Inflammation of the accessory sinuses.		2	1	1				3	5
Inflammation of the naso-pharynx.		1	1						1
								2	2
DISEASES OF THE CIRCULATORY SYSTEM.									
Pericarditis.	7	57	8	9	1	10	6	68	132
Endocarditis.		1				1			1
Valvular disease—		2				1	1		2
Aortic.	1	5		5			1	6	12
Mitral.	4	21		19		5	1	20	45
Aortic and mitral.		2				1	1		2
Tricuspid.		1	1						1
Inflammation muscular substance of heart.								1	1
Hypertrophy of heart.		1		1				7	8
Angina pectoris.								5	5
Disordered action of the heart—									
Abnormal rapidity.		1	1					3	4
Irregularity.								5	5
Degeneration of arteries.		1		1					1
Arterio-capillary fibrosis.								1	1
Aneurism of arteries.	1	3		1	1	1	1	5	9
Obstruction of arteries, thrombosis.		1		1					1
Phlebitis.		1				1			1
Varix.	1	17	6	11			1	14	32
Obstruction of veins.								1	1
DISEASES OF THE RESPIRATORY SYSTEM.									
Perichondritis.	2	133	85	39	4	3	4	359	494
Inflammation of mucous membrane of larynx—								1	1
Catarrhal, acute.		6	2	4				15	21
Catarrhal, chronic.		1		1				6	7
Tracheitis.								2	2
Bronchitis—									
Catarrhal, acute.		48	34	12	2			240	297
Catarrhal, chronic.		9		6	2			31	40
Spasmodic asthma.		7	1	5			1	14	21
Congestion of lung.								1	1
Hemorrhage of lung, hemoptysis.								2	2
Pneumonia.	1	44	39	5		1		5	50
Gangrene.								1	1
Chronic interstitial inflammation.		1					1		1
Phthisis—									
Acute.								2	2
Chronic.								2	2
Tubercular.								7	7
Emphysema of lungs.		1		1					1
Pleurisy—									
Acute.	1	15	9	4		2	1	16	32
Chronic.		1		1				5	6
DISEASES OF THE DIGESTIVE SYSTEM.									
Ulceration of the lips.	10	226	153	62	5	2	14	573	809
Inflammation of the mouth.								1	1
Ulceration of the mouth.								5	5
Caries of dentine and cementum.								1	1
Inflammation of dental periosteum.								3	3
Abscess of dental periosteum.		5	2	3					5
Inflammation of gums and alveoli.		1	1					8	9
Suppuration of alveoli.		1	1					2	3
Ulceration of gums and alveoli.		1		1				6	7
Toothache.								4	4
Ulceration of the tongue.		1				1		1	2
Sore throat.		1	1					15	16
Inflammation of tonsils—									
Follicular.		27	22	5				65	92
Suppuration.		15	10	5				15	30

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE PACIFIC—Continued.

Diseases.	Number of cases.							Total treated in hospital and dispensary.	
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.		Treated at dispensary.
DISEASES OF THE DIGESTIVE SYSTEM—Continued.									
Inflammation of salivary glands.....		1	1					1	2
Inflammation of the pharynx.....								22	22
Catarrhal.....		1	1						1
Follicular.....								3	3
Stricture of esophagus.....		1		1					1
Inflammation of the stomach, catarrhal.....		18	4	10			4	58	74
Ulceration of the stomach.....		1		1					1
Superficial.....	1	1	2	1			1		3
Dilatation of the stomach.....		1					1		1
Indigestion.....		8	4	3	1			120	128
Vomiting.....		1	1					1	2
Gastralgia.....								5	5
Loss of appetite.....								1	1
Inflammation of the intestines—									
Enteritis.....	1	3	2	2				5	9
Typhlitis.....		14	8	5		1		3	17
Colitis.....		2	2						2
Catarrhal.....	1	4	4	1				3	6
Fecal accumulation.....		1		1					1
Hernia.....	3	45	37	3	2	1	5	67	113
Obstruction of the intestines.....		3	1	2					3
Constipation.....		1					1	66	67
Colic.....								1	1
Diarrhea.....		12	9	3				39	51
Periproctitis, abscess.....	1	6	4	3					7
Ulceration of rectum.....		1	1						1
Fistula in ano.....	1	5	3	2			1	8	14
Prolapse of the rectum.....	1	1	2						2
Piles—									
Internal.....		5	5					4	9
External.....	1	10	11					11	22
Mixed.....		6	3	2			1	14	20
Pruritus ani.....								1	1
Inflammation of the liver—									
Acute.....		1	1					1	2
Chronic.....		4		3			1		4
Hyperemia of the liver.....		1		1					1
Hypertrophy of the liver.....								3	3
Jaundice.....		3	2	1				5	8
Inflammation of hepatic ducts and gall bladder.....		9	7	1	1				9
Calculi.....								2	2
Inflammation of the peritoneum.....		3	1	2					3
Dropsy.....		1		1					1
DISEASES OF THE LYMPHATIC SYSTEM.....									
Inflammation of lymph glands.....	1	45	29	14	1		2	61	107
Suppuration.....		29	18	8	1		2	53	82
Inflammation of lymphatics.....	1	15	10	6				6	22
Elephantiasis.....		1	1					1	1
DISEASES OF THE THYROID BODY.....									
Goitre.....		1		1					1
		1		1					1
DISEASES OF THE URINARY SYSTEM.....									
Acute nephritis.....	3	43	3	26	2	10	5	76	122
Bright's disease.....		10	1	5	1	2	1	2	13
Chronic nephritis.....	1	5		3		3		4	10
Granular kidney.....		14		7		5	2	4	18
Abscess, pyonephrosis.....		3		3				1	4
Movable kidney.....		2			1		1		2
Calculus in kidney.....	1			1					1
Hæmaturia.....								1	1
Albuminuria.....		1		1					1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE PACIFIC—Continued.

Diseases.	Number of cases.							
	Remaining in hos- pital from previ- ous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hos- pital at close of year.	Total treated in hospital and dis- pensary.
DISEASES OF THE URINARY SYSTEM—								
Continued.								
Inflammation of bladder—								
Acute.....	1	2		2			1	25
Subacute.....		2	1	1				6
Chronic.....		2		2				38
Retention of urine.....		1	1					1
Incontinence of urine.....		1		1			1	2
DISEASES OF THE GENERATIVE SYSTEM..	6	95	61	32	1		7	366
Urethritis.....								6
Gleet.....								41
Hemorrhage of the urethra.....								1
Stricture of the urethra, organic.....	3	12	8	7				65
Inflammation of the prostate, acute.....							1	1
Hypertrophy of the prostate.....		1		1				1
Phimosis.....		7	5	1		1	2	9
Paraphimosis.....		1	1				3	4
Inflammation of the glans of the penis.....		1	1			1		1
Ulcer of penis.....		1		1			3	4
Soft chancre.....	2	36	25	10		3	194	232
Hydrocele of the spermatic cord.....	1	1	1	1			2	4
Varicocele.....		13	9	2	1	1	14	27
Hydrocele of tunica vaginalis.....		5	4	1			3	8
Inflammation of the testicle—								
Acute orchitis.....		12	5	7			17	29
Chronic orchitis.....		2	1			1	2	4
Epididymitis.....		3	2	1			7	10
Spermatorrhoea.....							4	4
Inflammation of the vagina.....							1	1
DISEASES OF THE ORGANS OF LOCOMO- TION	5	41	26	14		1	5	138
Inflammation of the bones—								
Osteitis.....		3	1	2			1	4
Periostitis.....		1	1				4	5
Necrosis.....		2	1	1			1	3
Ununited fracture of false joint.....	1			1				1
Inflammation of joints, acute syno- vitis.....		3	3				2	5
Ankylosis.....	2		1			1	1	3
Loose body in joint.....		1						1
Dislocation of joint.....							2	2
Inflammation of spine.....		1		1				1
Psoas, lumbar, and other abscesses.....	1					1	7	8
Posterior curvature of spine.....							1	1
Contracture of muscle.....								1
Myalgia.....		18	12	5		1	103	121
Lumbago.....	1			1				1
Inflammation of sheaths of tendons.....							2	2
Inflammation of bursæ, acute.....		2	2				9	11
Bunion.....		5		3		2	3	8
Bursal cyst.....		2	2					2
Flat foot.....		2		2			1	3
Hammer toe.....		1		1				1
DISEASES OF THE CONNECTIVE TISSUE..	3	58	42	16	1		2	104
Inflammation.....	1	28	20	7			2	38
Abscess.....	1	27	20	7	1		65	93
Gangrene.....	1		1					1
Edema.....		3	1	2			1	4
DISEASES OF THE SKIN	4	69	48	21	1		3	341
Erythema.....		2	1	1				3
Urticaria.....							12	12
Prickly heat.....		1	1				3	4
Eczema.....		4	3	1			57	61
Impetigo.....		1	1				4	6

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE PACIFIC—Continued.

Diseases.	Number of cases.							Total treated in hospital and dispensary.
	Remaining in hospital from previous year.	Admitted during the year	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.		Treated at dispensary.
DISEASES OF THE SKIN—Continued.								
Prurigo.....							1	1
Psoriasis.....		1	1				6	7
Sudamina.....							4	4
Herpes.....							6	6
Zona.....		2	2				4	6
Pemphigus.....		1		1			2	3
Dermatitis herpetiformis.....							1	1
Acne.....							7	7
Gutta rosea.....		1		1				1
Sycosis.....		1	1				3	4
Seborrhœa.....		1	1				5	6
Leucoderma.....							1	1
Ulcer.....	4	25	15	10	1		3	92
Boil.....		21	19	2			117	138
Carbuncle.....		5	2	3			3	8
Whitlow.....		2	1	1			4	6
Onychia.....							4	4
Tylosis.....		1		1			2	3
Corn.....							1	1
Hyperidrosis.....							1	1
Injuries.....								
GENERAL INJURIES.....	2	14	11	3	1	1	31	47
Effects of heat—								
Burns and scalds.....	1	11	10	1	1		29	41
Heat stroke.....							1	1
Effects of chemical irritants and corrosives.....		1		1				1
Multiple injury.....	1	2	1	1		1	1	4
LOCAL INJURIES.....	29	501	318	178	5	1	28	845
Contusion of nerves.....		1						1
Wound of nerves.....							2	2
Wound of veins.....							1	1
Wound of gland.....							1	1
Wound of secreting gland.....							1	1
Contusion of muscles.....		1		1			1	2
Strain of muscles.....		4	3	1			3	7
Abrasion of skin.....							3	3
Wound of skin.....		2	2				2	4
Burn or scald of skin.....		12	6	4			25	37
Frostbite.....							1	1
Effects on the skin of irritants or corrosives.....		1	1				3	4
Burn or scald of mucous membrane.....		1		1				1
Contusion of scalp.....		1	1				2	3
Wound of scalp.....	1	10	7	4			38	49
With injury to the aponeurosis.....		6	6				3	9
Contusion of skull.....							1	1
Fracture of the vault of skull.....		3	1	1		1	1	4
Fracture of the base of skull.....		1	1				1	1
Wound of skull.....							1	1
Concussion of brain.....		2	2				1	3
Contusion of face.....		4	1	3			11	15
Wound of face and mouth.....		5	5				29	34
Fracture of facial bones.....	1	12	4	6	1		2	16
Dislocation of nasal cartilages.....							1	1
Contusion of eyelid.....		3	2	1			7	10
Wound of eyelid.....							3	3
Subconjunctival hemorrhage.....							2	2
Wound of conjunctiva.....							1	1
Contusion of eyeball.....							2	2
Foreign bodies in the conjunctiva or cornea.....								
Wound of eyeball.....		2	1	1			12	14
Fracture cartilage of larynx.....		1	1				1	1
Wound of neck.....							2	2

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

DISTRICT OF THE PACIFIC—Continued.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.
LOCAL INJURIES—Continued.								
Dislocation of spine.....		1	1					21
Contusion of chest.....		9	6	3				23
Fracture of ribs.....	1	34	22	13				47
Wound of parietes of chest.....							1	1
Penetrating wound of pleura or lung.....		3	1	1		1		3
Contusion of back.....		17	11	6				41
Sprain of back.....		11	6	4	1			34
Wound of back.....							1	1
Fracture of spine.....	1			1				1
Fracture of coccyx.....		1		1				1
Compression of spinal cord.....	1			1				1
Contusion of abdomen.....		1	1				3	4
Wound of parietes of abdomen.....		2	1	1			3	5
Rupture of viscera.....		1	1					1
Wound of the male urethra, perineum, scrotum, testis, or penis.....		1	1				6	7
Foreign body in the rectum.....							1	1
Fracture or dislocation of pelvic bones.....		3	3					3
Contusion of testicle.....		1	1					1
Diffused hæmatocele of cord.....							1	1
Contusion of upper extremities.....	1	12	7	6			46	59
Sprain of shoulder.....		1		1			4	5
Sprain of elbow.....		1	1				2	3
Sprain of wrist.....		3	1	1		1	39	42
Sprain of hand.....							6	6
Sprain of thumb.....		3		3			2	5
Sprain of fingers.....							2	2
Wound of upper extremities.....	1	63	37	23		4	288	352
Wound of joint, upper extremities.....							1	1
Injury of these.....		1	1					1
Fracture of clavicle.....		6	5	1				6
Fracture of scapula.....		1		1			3	4
Fracture of humerus.....		8	4	3		1	1	9
Fracture of bones of forearm—								
Radius.....	4	8	10	2			4	16
Ulna.....		5	4	1			1	6
Both bones.....		1	1					1
Fracture of carpus, metacarpus, or phalanges.....		6	1	3	1	1	10	16
Dislocation of clavicle.....		2	2					2
Dislocation of humerus.....	1	4	3	2			2	7
Dislocation of radius and ulna.....		1					1	1
Dislocation of phalanges of fingers.....		2	2				4	6
Dislocation of metacarpus.....		1	1					1
Contusion of lower extremities.....	2	78	54	19	1		6	160
Sprain of hip.....							1	1
Sprain of knee.....	1	4	2	3			13	18
Sprain of ankle.....	1	42	21	21		1	25	68
Sprain of foot.....		1	1				2	3
Internal derangement of joints.....		2		1		1		2
Wound of lower extremities.....	1	35	21	13		2	56	92
Wound of joint, lower extremities.....		1				1	3	4
Fracture of femur.....	4	7	7	2	1		1	11
Fracture of patella.....		5	4			1		5
Fracture of tibia.....	3	7	7	2		1	1	11
Fracture of fibula.....	1	6	6	1				7
Fracture of tibia and fibula.....	3	17	11	8		1	1	21
Fracture of bones of foot—								
Of the os calcis.....		2		2				2
Of the metatarsus.....		5	1	4			2	7
Of the phalanges of the toes.....		1	1				2	3
Dislocation of kneejoint.....	1		1					1
Fracture of the astragalus.....		1	1					1
Injuries of bursæ.....							2	2
Malingering.....		1	1					1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

PACIFIC ISLANDS.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.
TOTAL CASES.....	9	166	87	67	1	4	16	280
General Diseases.....	3	48	19	25		2	5	89
Dengue.....		9	9					3
Influenza.....								1
Enteric fever.....		1				1		1
Dysentery.....		5	2	2			1	5
Malarial fever:								
Intermittent.....								1
Remittent.....		1		1				1
Tubercle.....		8		5		1	2	10
Syphilis:								
Primary.....		1		1				1
Secondary.....		2		2				12
Gonorrhea.....	2	13	1	13			1	44
Diseases dependent on animal parasites:								
Taenia mediocanellata.....		1	1					1
Taenia saginata.....		1	1					1
Sarcoptes scabiei.....								2
Culix pipiens.....								1
Diseases dependent on vegetable parasites:								
Trichophyton tonsurans.....								1
Microsporon furfur.....								1
Effects of vegetable poisons, alcohol.....								1
Effects of the presence of foreign bodies.....								2
Effects of chemical agents.....								1
Alcoholism.....	1	1	2					2
Rheumatic fever.....		2	1				1	2
Rheumatism.....		1		1				15
Gout.....								1
Congenital malformations.....								1
Debility.....								2
Local Diseases.....								
DISEASES OF THE NERVOUS SYSTEM.....		5	1	2	1		1	9
Of the spinal cord and membranes, cord—								
Degeneration of lateral columns.....		1		1				1
Functional nervous disorders with other diseases of undetermined nature—								
Torticollis.....		1	1					1
Headache.....								5
Neuralgia.....								2
Hysteria.....		1		1				1
Mental diseases—								
Melancholia.....		1			1			1
General paralysis of the insane.....		1					1	1
DISEASES OF THE EYE.....								6
Conjunctivitis—								
Catarrhal, acute.....								2
Sty.....								3
Oedema of eyelids.....								1
DISEASES OF THE EAR.....		3	1	2				5
Accumulation in external meatus of wax or epidermis.....		1	1					1
Inflammation of the middle ear—								
Suppurative.....								1
Perforation of membrana tympani.....		2		2				4
DISEASES OF THE NOSE.....								4
Inflammation of soft parts.....								4

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

PACIFIC ISLANDS—Continued.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Treated at dispensary.
DISEASES OF THE CIRCULATORY SYSTEM.		3		2		1		2
Valvular disease—								
Aortic.		1				1		1
Mitral.								1
Disordered action of the heart—								
Irregularity.								1
Aneurism of arteries.		1		1				1
Phlebitis.		1		1				1
DISEASES OF THE RESPIRATORY SYSTEM.	1	4		5				21
Inflammation of mucous membrane of larynx, catarrhal, acute.								1
Bronchitis—								
Catarrhal, acute.		1		1				20
Catarrhal, chronic.		1		1				1
Spasmodic asthma.	1	1		2				2
Emphysema, vesicular.		1		1				1
DISEASES OF THE DIGESTIVE SYSTEM.		20	15	5				65
Caries of dentine and cementum.								2
Sore throat.								2
Inflammation of tonsils—								
Follicular.		1	1					2
Suppuration.		1	1					1
Inflammation of the stomach.								1
Catarrhal.		1		1				1
Ulceration of the stomach.								1
Superficial.		2		2				2
Indigestion.								7
Vomiting.								1
Inflammation of the intestines—								
Typhilitis.		1	1					1
Colitis.								1
Fecal accumulation.		3	3					7
Hernia.								1
Constipation.		4	4					18
Colic.								1
Diarrhoea.		4	4					15
Enteralgia.								1
Fistula in ano.		1	1					3
Piles, external.								1
Inflammation of the liver, chronic.		1		1				1
Jaundice.		1		1				1
DISEASES OF THE LYMPHATIC SYSTEM.		7	7					8
Inflammation of lymph glands.		7	7					8
DISEASES OF THE URINARY SYSTEM.		4	1	3				4
Bright's disease, chronic nephritis.		3		3				3
Hæmaturia.								2
Inflammation of bladder—								
Acute.								1
Chronic.		1	1					1
DISEASES OF THE GENERATIVE SYSTEM.		8	4	4				24
Stricture of urethra, organic.		2	1	1				3
Urethral fistula.		1	1	1				1
Hypertrophy of the prostate.		1		1				1
Paraphimosis.								1
Ulcer of penis.								1
Soft chancre.		4	3	1				16
Varicocele.								1
Inflammation of the testicle, acute orchitis.								1
Edema of prepuce.								1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

PACIFIC ISLANDS—Continued.

Diseases.	Number of cases.							Total treated in hospital and dispensary.
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	
DISEASES OF THE ORGANS OF LOCOMOTION.		4	2	2			18	22
Inflammation of joints—								
Acute synovitis		2	1	1			1	3
Chronic synovitis							1	1
Ankylosis							1	1
Myalgia							12	12
Inflammation of bursæ, acute		1	1				1	2
Abscess of bursæ		1		1				1
Flat foot							2	2
DISEASES OF THE CONNECTIVE TISSUE.		6	5	1			8	14
Abscess		6	5	1			7	12
Oedema							1	1
DISEASES OF THE SKIN.		5	3	1		1	27	32
Prickly heat							1	1
Eczema		1	1					1
Ulcer		2	1	1			12	14
Boll		1					13	14
Onychia							1	1
Wen		1	1					1
Injuries.		1		1			8	4
GENERAL INJURIES.								
Effects of heat, burns and scalds		1		1			3	4
LOCAL INJURIES.	5	48	20	14		1	9	86
Strain of tendons		1	1				1	2
Contusion of scalp							1	1
Wound of scalp							4	4
Contusion of face	1			1				1
Wound of face and mouth							6	6
Fracture of facial bones		2	1				1	2
Wound of pinna							1	1
Wound of neck		2				1	1	2
Contusion of chest							3	3
Dislocation of costal cartilages	1	1	1	1				2
Contusion of back		2		2			2	4
Sprain of back		3		2			1	15
Fracture of spine		1					1	1
Fracture or dislocation of pelvic bones		1	1					1
Injury to back with compression of cord	1		1					1
Contusion of upper extremities		1		1			2	3
Sprain of wrist							1	1
Sprain of hand		1	1				1	2
Sprain of fingers							1	1
Wound of upper extremities		5	3	1			1	20
Fracture of humerus		1	1					2
Fracture of carpus, metacarpus, or phalanges		2	2				2	4
Dislocation of clavicle		1		1				1
Contusion of lower extremities		4	3	1			12	16
Sprain of knee		1					6	7
Sprain of ankle		4	2	2			3	7
Sprain of foot							1	1
Wound of lower extremities		6	5	1			7	13
Fracture of femur	1	1	2					2
Fracture of tibia		3	2				1	3
Fracture of fibula		2	1				1	2
Fracture of tibia and fibula	1	2	2	1				3
Fracture of bones of foot, of the tarsus		1					1	1

TABLE VII.—TABULAR STATEMENT, BY DISTRICTS, OF DISEASES AND INJURIES TREATED DURING THE FISCAL YEAR ENDED JUNE 30, 1904—Continued.

QUARANTINE STATIONS.

Diseases.	Number of cases.							
	Remaining in hospital from previous year.	Admitted during the year.	Recovered.	Improved.	Not improved.	Died.	Remaining in hospital at close of year.	Total treated in hospital and dispensary.
TOTAL CASES	5	54	47	8	3	4	23	82
General Diseases	5	49	44	5	1	4	10	64
Smallpox.....	5	9	14					14
Influenza.....							3	3
Enteric fever.....		3	1	2				5
Yellow fever.....		5	2			3		5
Beriberi.....		2		2				2
Malarial fever—								
Intermittent.....		23	23					23
Remittent.....		2	1			1		2
Septicæmia.....		1	1					1
Leprosy.....		1			1			1
Syphilis—								
Primary.....							1	1
Secondary.....		1		1				1
Gonorrhea.....							3	3
Diseases dependent on animal parasites—								
Papular eruption.....		1	1					1
Sarcoptes scabiei.....							1	1
Effects of chemical agents.....							1	1
Alcoholism.....		1	1					1
Rheumatism.....							1	1
Local Diseases								
DISEASES OF THE NERVOUS SYSTEM		2			2			2
Functional nervous disorders with other diseases of undetermined nature, neuralgia.....		1			1			1
Mental diseases, melancholia.....		1			1			1
DISEASES OF THE EYE							2	2
Conjunctivitis, catarrhal, acute.....							1	1
Iritis.....							1	1
DISEASES OF THE RESPIRATORY SYSTEM		2	2				1	3
Pneumonia.....		2	2				1	3
DISEASES OF THE DIGESTIVE SYSTEM							8	8
Ulceration of the mouth.....							3	3
Impaction of the teeth.....							1	1
Indigestion.....							1	1
Jaundice.....							1	1
Inflammation of hepatic ducts and gall bladder.....							1	1
DISEASES OF THE LYMPHATIC SYSTEM		3		3				3
Inflammation of lymph glands.....		2		2				2
Suppuration.....		1		1				1
DISEASES OF THE CONNECTIVE TISSUE		1	1				1	2
Abscess.....		1	1				1	2
DISEASES OF THE SKIN							2	2
Herpes.....							1	1
Ulcer.....							1	1
Injuries								
LOCAL INJURIES							1	1
Sprain of back.....							1	1

TABLE VIII.—TABULATED STATEMENT, BY DISTRICTS, OF CAUSES OF MORTALITY AMONG PATIENTS OF THE SERVICE DURING THE YEAR ENDED JUNE 30, 1904.

Cause of death.	Total.	Districts.								
		Atlanto.	West Indies.	Gulf.	Ohio.	Mississippi.	Great Lakes	Pacific.	Pacific Islands.	Quarantine stations.
Total deaths from all causes	491	155	2	40	40	35	73	137	4	4
FROM INJURIES.....	25	6	0	6	2	3	5	2	1	0
FROM DISEASES.....	466	149	2	34	38	32	68	135	3	4
General Diseases	243	55	1	16	17	19	25	103	2	4
Influenza.....	4	1				1	1	1		
Cerebrospinal fever.....	1	1								
Enteric fever.....	42	8	1	2	6	4	11	9	1	
Dysentery.....	2				1			1		
Yellow fever.....	3									3
Berberi.....	1							1		
Malarial fever:										
Intermittent.....	8	4		1		2		1		
Remittent.....	5	3		1						1
Septicæmia.....	1				1					
Tetanus.....	1	1								
Tubercle.....	142	31		8	7	4	11	81	1	
Leprosy.....	1							1		
Syphilis, secondary.....	3				1		2			
Gonorrhœa.....	1	1								
Effects of vegetable poisons, opium.....	1			1						
Effects of heat.....	1							1		
Alcoholism.....	6	1				5				
Delirium tremens.....	1				1					
Rheumatic fever.....	1					1				
Rheumatism.....	1			1						
New growth, malignant:										
Sarcoma.....	2	2								
Carcinoma.....	3			1		1		1		
Squamous carcinoma.....	3							3		
Anæmia, idiopathic.....	2			1		1				
Diabetes mellitus.....	4	1						3		
Debility.....	1	1								
Old age.....	1	1								
Local Diseases.....										
DISEASES OF THE NERVOUS SYSTEM.....	26	16		3		3		4		
Of the spinal cord and membranes, cord—										
Hæmorrhage.....	3	2		1						
Degeneration—										
Of lateral columns.....	1			1						
Insular sclerosis.....	1							1		
Of the brain and its membranes, membranes—										
Hæmorrhage.....	2	2								
Functional nervous disorders with other diseases of undetermined nature—										
Apoplexy.....	2	1				1				
Paralysis, hemiplegia.....	7	6		1						
Epilepsy.....	2					2				
Nervous weakness.....	1	1								
Mental diseases—										
Melancholia.....	2	1						1		
Dementia.....	2	2								
Mental stupor.....	1							1		
General paralysis of the insane.....	2	1						1		
DISEASES OF THE EYE.....	1							1		
Lenticular cataract.....	1							1		
DISEASES OF THE EAR.....	2						1	1		
Inflammation of the middle ear—										
Nonsuppurative.....	1						1			
Suppurative.....	1							1		

TABLE VIII.—TABULATED STATEMENT, BY DISTRICTS, OF CAUSES OF MORTALITY AMONG PATIENTS OF THE SERVICE DURING THE YEAR ENDED JUNE 30, 1904—Continued.

Cause of death.	Total.	Districts.							
		Atlantic.	West Indies.	Gulf.	Ohio.	Mississippi.	Great Lakes.	Pacific.	Pacific Islands. Quarantine sta- tions.
DISEASES OF THE CIRCULATORY SYSTEM	43	13	1	5	2	3	8	16	1
Pericarditis.....	1							1	
Endocarditis.....	1							1	
Valvular disease—									
Aortic.....	13	5		2	2		3		
Mitral.....	19	6	1	2		2	3	5	1
Aortic and mitral.....	3			1			1	1	
Degeneration of heart, fatty.....	1					1			
Degeneration of arteries, arterio-capil- lary fibrosis.....	1						1		
Aneurysm of arteries.....	2	1						1	
Obstruction of arteries, thrombosis.....	1	1							
Phlebitis.....	1							1	
DISEASES OF THE RESPIRATORY SYSTEM	72	34		4	12	9	10	3	
Inflammation of mucous membrane of larynx, catarrhal, chronic.....	1			1					
Bronchitis—									
Catarrhal, acute.....	2	2							
Catarrhal, chronic.....	1					1			
Ulceration of bronchi.....	1				1				
Spasmodic asthma.....	3	2			1				
Pneumonia.....	57	28		2	8	8	10	1	
Phthisis, acute.....	2			1	1				
Pleurisy, acute.....	5	2			1			2	
DISEASES OF THE DIGESTIVE SYSTEM	36	14		4	4	3	9	2	
Inflammation of dental periosteum.....	1			1					
Inflammation of tonsils, suppuration.....	1	1							
Inflammation of salivary glands.....	1	1							
Inflammation of the stomach, catarrhal.....	3	2					1		
Hyperæmia of stomach.....	1			1					
Indigestion.....	2				1		1		
Inflammation of the intestines, typhlitis.....	8	1		2	1		3	1	
Ulceration of the intestines.....	1				1				
Hernia.....	3	1				1		1	
Obstruction of the intestines, volvulus.....	3	3							
Diarrhea.....	1					1			
Periproctitis, abscess.....	1	1							
Prolapse of the rectum.....	1						1		
Inflammation of the liver—									
Acute.....	2	1					1		
Chronic.....	2	1			1				
Hypertrophy of the liver.....	1	1							
Inflammation of hepatic ducts and gall bladder.....	1						1		
Calculi.....	1						1		
Inflammation of the peritonæum.....	2	1				1			
DISEASES OF THE LYMPHATIC SYSTEM	1				1				
Inflammation of lymph glands.....					1				
DISEASES OF THE SUPRARENAL CAPSULES	1	1							
Addison's disease.....		1							
DISEASES OF THE URINARY SYSTEM	33	10		2	1	4	6	10	
Acute nephritis.....	4	1				1		2	
Bright's disease—									
Chronic nephritis.....	21	4		1	1	2	5	8	
Granular kidney.....	7	5				1	1		
Inflammation of bladder, acute.....	1			1					
DISEASES OF THE GENERATIVE SYSTEM	2	1					1		
Stricture of urethra, organic.....	1	1							
Hypertrophy of the prostate.....	1						1		
DISEASES OF THE ORGANS OF LOCOMOTION	4	2			1			1	
Caries.....	1	1							
Necrosis.....	1	1							
Foos, lumbar, and other abscesses.....	2				1			1	

TABLE VIII.—TABULATED STATEMENT, BY DISTRICTS, OF CAUSES OF MORTALITY AMONG PATIENTS OF THE SERVICE DURING THE YEAR ENDED JUNE 30, 1904—Continued.

Cause of death.	Total.	Districts.							
		Atlantic.	West Indies.	Gulf.	Ohio.	Mississippi.	Great Lakes.	Pacific.	Pacific Islands. Quarantine sta- tions.
DISEASES OF THE CONNECTIVE TISSUE.....	1	1							
Inflammation.....	1	1							
DISEASES OF THE SKIN.....	1	1							
Corn.....	1	1							
Injuries.....	6	2		1	1		1	1	
GENERAL INJURIES.....									
Effects of heat—									
Burns and scalds.....	1						1		
Sunstroke.....	1			1					
Multiple injury.....	3	1			1			1	
Heat, apoplexy.....	1	1							
LOCAL INJURIES.....	19	4		5	1	3	4	1	1
Wound of internal viscera.....	1					1			
Burn or scald of skin.....	2			1			1		
Wound of scalp, with injury to the aponeurosis.....	1			1					
Fracture of the vault of skull.....	3			1			1	1	
Fracture of the base of skull.....	1						1		
Wound of skull.....	1	1							
Concussion of brain.....	2				1	1			
Contusion of neck.....	1	1							
Wound of neck.....	2			1					1
Gunshot wound.....	2			1		1			
Wound of upper extremities.....	1						1		
Wound of lower extremities.....	1	1							
Fracture of tibia and fibula.....	1	1							

TABLE IX.—RATIO OF DEATHS FROM SPECIFIC CAUSES.

Deaths from—	Per 100 from all causes.	Deaths from—	Per 100 from all causes.
General diseases.....	49.49	Diseases of the digestive system.....	7.33
Diseases of the nervous system.....	5.30	Diseases of the urinary system.....	6.72
Diseases of the circulatory system.....	8.76	Injuries.....	5.09
Diseases of the respiratory system.....	14.66	All other causes.....	2.65

TABLE X.—RATIO OF DEATHS IN EACH DISTRICT.

District.	Per 100 patients treated in hospital.	District.	Per 100 patients treated in hospital.
Atlantic.....	3.18	Great Lakes.....	2.63
West Indies.....	3.07	Pacific.....	5.29
Gulf.....	2.96	Pacific Islands.....	2.28
Ohio.....	3.76	Quarantine stations.....	6.77
Mississippi.....	2.67		

TABLE XI.—COMPARATIVE EXHIBIT—MORTALITY PER 100 PATIENTS TREATED IN HOSPITAL, BY DISTRICTS, 1895-1904.

Districts.	General average.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.
Atlantic.....	3.41	3.73	3.46	3.17	3.32	3.36	3.42	3.23	3.10	4.13	3.18
The West Indies.....	3.07										3.07
The Gulf.....	3.22	2.98	2.90	3.33	2.94	2.78	4.11	2.87	3.59	3.78	2.96
The Ohio.....	2.98	3.23	3.24	2.78	2.73	3.28	3.58	2.18	2.16	2.86	3.76
The Mississippi.....	2.99	2.53	3.20	2.92	3.18	3.13	3.46	3.46	2.38	2.97	2.67
The Great Lakes.....	2.74	2.54	2.26	2.86	2.34	3.26	2.42	2.91	2.34	3.84	2.63
The Pacific.....	5.28	4.38	4.70	4.40	3.43	4.87	3.78	3.62	3.93	4.90	5.29
The Pacific Islands.....	5.92									8.67	2.88
The quarantine stations.....	6.42		4.76	4.94	2.68	1.15	12.90	6.38	6.06	12.12	6.77

TABLE XII.—COMPARATIVE EXHIBIT—RATIO OF DEATHS FROM SPECIFIC CAUSES, 1895-1904.

Deaths from—	General average.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.
General diseases.....	47.59	43.94	50.70	48.99	45.45	55.60	44.02	45.60	44.01	48.06	49.49
Diseases of the—											
Nervous system.....	5.50	4.81	4.65	5.56	6.56	3.02	3.62	8.78	7.29	5.36	5.30
Circulatory system.....	10.72	10.76	11.39	9.85	12.86	9.07	9.71	11.87	12.23	10.72	8.76
Respiratory system.....	12.79	16.24	12.23	10.35	11.29	9.30	15.12	13.53	13.54	11.64	14.66
Digestive system.....	7.98	10.53	6.51	9.09	7.35	7.67	9.70	6.65	7.55	7.39	7.33
Urinary system.....	6.34	6.17	3.49	7.07	5.25	8.37	9.03	5.70	4.94	6.65	6.72
Injuries.....	6.07	3.43	6.28	6.31	8.66	5.35	6.32	5.22	7.55	6.47	5.09
From all other causes.....	3.01	4.12	4.65	2.78	2.63	1.62	2.48	2.61	2.86	3.71	2.65

TABLE XIV.—COMPARATIVE EXHIBIT—AVERAGE DURATION OF TREATMENT IN HOSPITAL IN EACH DISTRICT, 1895-1904.

Districts.	General average.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.
Atlantic.....	29.74	31.32	32.52	28.93	30.74	32.00	27.88	28.82	29.35	28.36	27.48
The West Indies.....	22.18									20.47	23.90
The Gulf.....	23.61	22.46	22.24	22.41	21.35	21.41	23.15	22.78	25.65	27.14	27.52
The Ohio.....	22.62	25.18	25.43	22.20	23.83	23.02	21.98	20.88	20.81	21.53	21.48
The Mississippi.....	18.00	22.92	20.74	19.00	18.57	17.56	15.47	15.42	18.41	15.30	16.62
The Great Lakes.....	24.04	28.34	28.25	26.27	25.45	24.02	20.24	21.20	21.15	21.90	23.61
The Pacific.....	38.38	40.66	38.81	36.20	28.41	29.12	31.15	38.17	42.34	48.16	50.81
The Pacific Islands.....	26.12									26.15	28.10
The quarantine stations.....	14.52	19.97	10.00	11.69	9.00	10.43	13.72	21.21	18.48	20.42	10.28

TABLE XIV.—SURGICAL OPERATIONS, FISCAL YEAR 1904.

Operations.	No. of cases.	Remarks.
Total number of operations	1,529	
OPERATIONS ON TUMORS:		
Removal by excision.....	38	
For adenoma.....	28	
For lipoma.....	8	
For fibroma.....	2	
For osteoma.....	4	
For chondroma.....	1	
For sarcoma.....	7	
For carcinoma.....	5	
For condyloma.....	2	
For epithelioma.....	2	
For hematoma.....	2	
For papilloma.....	3	
OPERATIONS ON CYSTS	35	
Sebaceous cyst.....	22	
Bursal cyst.....	6	
Dermoid cyst.....	3	
Ranula.....	4	
EVACUATION OF ABSCESSES:		
By free incision and drainage.....	126	
Abscess of—		
Antrum.....	2	
Arm.....	6	
Forearm.....	7	
Axilla.....	4	
Back.....	1	
Breast.....	2	
Face.....	2	
Foot.....	6	
Finger.....	11	
Hand.....	23	
Ischio rectal fossa.....	18	
Knee.....	2	
Leg.....	6	
Lower jaw.....	5	
Neck.....	18	
Perineum.....	4	
Scalp.....	2	
Thigh.....	2	
Tonsil.....	1	
Psoas muscle.....	4	
CARBUNCLE	9	
Neck.....	7	
Back.....	2	
OPERATIONS FOR REMOVAL OF FOREIGN BODIES	9	
From—		
Eye.....	5	
Elbow.....	1	
Knee.....	2	
Wrist.....	1	
OPERATIONS ON BLOOD VESSELS	40	
Operations on arteries.....	7	
Ligation for hemorrhage.....	5	
For aneurism.....	2	1 aneurism femoral; successful. 1 aneurism aorta; died.
Operations on veins.....	33	
Obliteration of varices leg.....	33	26 ligation and excision; 7 ligation only.
OPERATIONS ON NERVES	3	
Excision of a portion of a nerve.....	1	Spinal accessory.
Stretching of a nerve.....	1	Sciatic.
Union of divided nerve.....	1	External popliteal.

TABLE XIV.—SURGICAL OPERATIONS, FISCAL YEAR 1904—Continued.

Operations.	No. of cases.	Remarks.
OPERATIONS ON THE LYMPHATIC ORGANS.....	311	
Incision and drainage of inflamed and suppurating glands.....	93	
Groin.....	76	
Neck.....	11	
Axilla.....	6	
Removal of lymphatic glands.....	218	
Groin.....	196	
Neck.....	21	
Axilla.....	1	
OPERATIONS ON THE SKIN AND SUBCUTANEOUS TISSUE..	36	
For chronic ulcer of leg.....	13	8 Thiersch's method. 1 Reverdin's method. 4 curetted.
Wound of—		
Scalp.....	4	
Face.....	4	
Arm.....	2	
Hand.....	3	
Finger.....	4	
Abdomen.....	2	
Thigh.....	2	
Throat.....	1	
Back.....	1	
OPERATIONS ON BONES.....	91	
Excision of portion of bone.....	14	
Of tibia.....	1	For necrosis.
Of femur.....	1	Do.
Of ribs.....	2	Do.
Of fibula.....	1	Do.
Of metatarsal.....	8	For necrosis, 2; for bunion, 6.
Of ulna.....	1	For necrosis.
Removal of fragments of bones by curetting and scraping.....	27	
Of ulna.....	4	For necrosis.
Of inferior maxilla.....	2	Do.
Of femur.....	5	Do.
Of radius.....	1	Do.
Of sternum.....	3	Do.
Of tarsus.....	1	Do.
Of ilium.....	2	Do.
Of tibia.....	9	Do.
Operations for ununited fractures.....	9	
Of tibia.....	2	Wired, successful.
Of metatarsus.....	2	Do.
Of femur.....	2	Successful.
Of ulna.....	1	Wired, successful.
Of inferior maxilla.....	2	Removal of loose fragments and scraping ends of bones—all successful.
Operations on fractured bones for fracture of.....	41	
Inferior maxilla.....	2	Wired by teeth.
Clavicle.....	1	
Humerus.....	2	Reduced and splint applied.
Radius and ulna.....	1	Reduced; plaster of Paris splint.
Patella.....	6	Reduced, 5 wired; 1 splint external.
Radius.....	4	Reduced; plaster of Paris.
Femur.....	4	Extension splint applied.
Tibia and fibula.....	9	Reduced; plaster of Paris splint
Tibia.....	4	Do.
Fibula.....	3	Do.
Rib.....	2	Adhesive straps.
Ilium.....	1	
Finger.....	1	Splints applied.
Vertebra, seventh cervical.....	1	

TABLE XIV.—SURGICAL OPERATIONS, FISCAL YEAR 1904—Continued.

Operations.	No. of cases.	Remarks.
OPERATIONS ON JOINTS.....	27	
Reduction of dislocation.....	13	
Shoulder.....	10	
Elbow.....	1	
Radio carpal.....	1	
Inferior maxilla.....	1	
Excisions of joints.....	1	Elbow for tubercular disease.
Operations for ankylosis of joints.....	5	
Finger.....	2	Briseint forcé.
Elbow.....	3	
Aspiration and injection.....	5	5 knee, tubercle.
Incision of joints.....	8	
Wrist.....	1	For tubercle.
Knee.....	6	4 for tubercle; 2 for abscess.
Elbow.....	1	For tubercle.
OPERATIONS ON MUSCLES, TENDONS, AND FASCIA.....	10	
Tenotomy of flexors of fingers.....	4	
Tenotomy of sterno cleido mastoid.....	3	
Tenotomy hamstring.....	1	
Tenotomy ocular.....	1	
Suture of tendon.....	1	Extensor index finger.
AMPUTATIONS.....	74	
Of thigh.....	7	
Of leg.....	4	
At knee.....	3	
Of arm.....	2	
Of forearm.....	4	
Of finger.....	37	
Of toe.....	12	
Of foot.....	5	
OPERATIONS ON THE SKULL.....	14	
Trephining.....	4	1 exploratory, successful; 1 epilepsy, Jacksonian.
Trephining and removal of portions of bone.....	7	1 Jacksonian epilepsy, successful; 3 depressed fracture of vault, successful; 3 compound comminuted fracture of vault, 2 successful, 1 died.
Opening of mastoid cells.....	3	
OPERATIONS ON THE SPINE AND SPINAL CORD.....	1	
Excision of neural arches.....	1	For relief of pressure and fracture; unsuccessful.
OPERATIONS ON FACE, NASAL CAVITIES, AND MOUTH.....	11	
For deformity of nose from necrosis of nasal bones.....	1	1 plastic operation.
Removal of polyp.....	2	
For deviation of nasal septum.....	1	Asch's operation.
Removal of tonsils.....	7	For hypertrophy.
OPERATIONS ON THE EYE AND ITS APPENDAGES.....	7	
Extraction of lens.....	1	
Excision of eyeball.....	3	
Iridectomy.....	3	
OPERATIONS ON THE LARYNX, TRACHEA, AND THYROID BODY.....	1	
Tracheotomy.....	1	Successful.
OPERATIONS ON THE THORAX AND BREAST.....	28	
Paracentesis of the pleural cavity.....	24	
Thoracotomy with excision of part of rib.....	4	

TABLE XIV.—SURGICAL OPERATIONS, FISCAL YEAR 1904—Continued.

Operations.	No. of cases.	Remarks.
OPERATIONS ON THE ABDOMEN.....	203	
Paracentesis of the abdomen.....	13	
Abdominal section.....	56	
Talma's operation.....	1	Recovered.
Appendicitis.....	33	30 recovered; 3 died.
Peritonitis.....	1	Successful.
Exploration.....	4	All successful.
Gastro-enterostomy.....	2	1 died—cancer; 1 recovered.
Suture of intestines.....	4	1 successful; 3 died.
Obstruction of intestines.....	4	3 died; 1 recovered.
Cholecystectomy.....	1	
Cholecystotomy.....	4	Successful.
Choledochostomy.....	1	
Splenectomy.....	1	Recovered; gunshot wound.
Operations for hernia.....	134	
For radical cure—		
(1) Oblique inguinal.....	118	112 Bassini; 7 modified Bassini; 6 Halstead; 124 successful, 1 died.
(2) Direct inguinal.....	7	Successful.
(3) Umbilical.....	1	Do.
(4) Ventral.....	2	
For strangulated hernia.....	6	
Inguinal.....	6	5 successful, 1 died.
OPERATIONS ON THE RECTUM AND ANUS.....	99	
For fistula in ano.....	43	
For anal fissure.....	2	
For hemorrhoids.....	54	
By clamp and cautery.....	26	
By ligation and excision.....	21	
Whitehead's operation.....	2	
By ligature.....	4	
Dilatation of sphincter.....	1	
OPERATIONS ON THE BLADDER AND URETHRA.....	88	
Upon bladder.....	7	
Median perineal cystotomy.....	3	
Suprapubic cystotomy.....	3	
Excision of bladder.....	1	Died.
For stricture of urethra.....	79	
(1) By gradual dilatation.....	28	
(2) By forcible dilatation.....	7	
(3) By internal urethrotomy.....	17	
(4) By external urethrotomy.....	20	
(5) By perineal section.....	7	
OPERATIONS ON THE KIDNEY.....	10	
Decapsulation (Edebohl's operation).....	7	6 successful, 1 unsuccessful.
Nephrotomy.....	2	Pyonephrosis; successful.
Nephrectomy.....	1	Successful.
OPERATIONS ON THE MALE GENERATIVE ORGANS.....	255	
For phimosis.....	171	163 circumcision; 8 dorsal incision.
For paraphimosis.....	5	5 circumcisions.
For varicocele.....	34	
For hydrocele.....	29	
(1) By tapping.....	13	
(2) By tapping and injection.....	6	
(3) Excision of parietal part of sac.....	10	
For castration.....	11	8 tubercle; 2 sarcoma; 1 carcinoma.
Prostatectomy.....	1	
Amputation of penis.....	4	2 carcinoma; 2 phagadema.
OPERATIONS ON THE FEMALE GENERATIVE ORGANS.....	3	
Abdominal section—		
For removal of ovaries.....	2	
Excision uterine polypus.....	1	

TABLE XV.—NATIVITIES OF PATIENTS TREATED IN UNITED STATES MARINE HOSPITALS DURING THE FISCAL YEAR ENDED JUNE 30, 1904.

Countries.	Number.	Countries.	Number.
Total.....	14,303	Italy.....	86
Africa.....	14	Japan.....	23
Australia.....	38	Mexico.....	18
Austria.....	124	Netherlands.....	79
Belgium.....	29	Norway.....	932
Canada.....	603	Philippines.....	11
Cape Verde Islands.....	110	Porto Rico.....	24
Central America.....	18	Portugal.....	68
China.....	9	Russia.....	96
Cuba.....	9	Scotland.....	304
Denmark.....	178	South America.....	42
England.....	395	Spain.....	135
Finland.....	283	Sweden.....	719
France.....	92	Switzerland.....	19
Germany.....	599	Turkey.....	2
Greece.....	56	United States.....	8,214
Hawaii.....	29	Wales.....	20
India.....	4	West Indies.....	199
Ireland.....	784	All other countries.....	55

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